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DIVISION OF
WATER QUALITY

INNOVATIVE ASSESSMENT ANALYTICAL RESULTS REPORT

Lower Silver Creek

Summit County, Utah

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Environmental Response and Remediation
Prepared by : Ann M. Tillia





Utah!

Where ideas connect

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August 21, 2002

Luke Chavez, Site Assessment Manager (8EPR-SA)
U.S. Environmental Protection Agency, Region VIII
Assessment, Emergency Response, Prevention, and
Preparedness Program
999 18th Street, Suite 300
Denver, Colorado 80202-2466

Dear Luke:

Enclosed for your review is the *Innovative Assessment Analytical Results Report* for the **Lower Silver Creek** site located 2 miles east of Park City, Summit County, Utah. The site is north of Richardson Flat and extends from Utah State Route 248 to the Silver Creek and Weber River confluence in Wanship. The site area includes the Rail Trail and more than 12 miles of Silver Creek and the associated riparian area.

The field activities documented in this report included the collection of surface water samples and sediment samples from Silver Creek, XRF (x-ray fluorescence) soil samples, and 10 percent of the XRF samples for laboratory analysis. The primary sampling area was Silver Creek and the adjacent riparian area. Generally, areas not sampled are the uplands to the west of the site, the Rail Trail, and areas east of the Rail Trail. Contaminates of concern include **lead, arsenic, mercury, antimony, zinc, and cadmium** resulting from historical mining and milling activities in the Park City area. Most of the samples collected for laboratory analysis had concentrations exceeding the EPA's 1996 Superfund Chemical Data Matrix (SCDM) benchmarks for lead, arsenic, and antimony. Silver Creek has been listed on the 2002 State of Utah 303(d) list of impaired waterways for contamination of zinc and cadmium. During the sampling many photographs were taken documenting the non-vegetated tailing piles and berms within the riparian area.

The property owners within the wetland and riparian area of the site use their land for grazing cattle or horses. The surrounding properties are experiencing rapid development to the west with commercial, government and utility facilities, and to the east with a high-end residential community. Recreational use within the site includes the Rail Trail (under the direction of the Utah Division of Parks and Recreation), that is used extensively for bicycling,

hiking, observing the wildlife, and access for fishing in Silver Creek. The Rail Trail begins in Prospector Square of Park City, and parallels Silver Creek downstream to Wanship.

Based on the information developed for this Innovative Assessment Analytical Analysis Report, the Utah Department of Environmental Quality (UDEQ), Division of Environmental Response and Remediation (DERR), recommends that the Lower Silver Creek IA site be listed on the CERCLIS List and that further assessment of the site be conducted under the CERCLA program. We will send in a separate letter a completed CERCLIS Data Entry Form for Discovery of Site requesting placement of this site on the CERCLIS List.

If you have any questions concerning the report, please contact Ann M. Tillia, Project Manager for the site, at (801) 536-4235.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Steven Thiriot", is written over a horizontal line.

J. Steven Thiriot, Manager
Site Assessment Section/CERCLA Branch
Division of Environmental Response and Remediation

JST/AMT/jdp

Enclosure

cc: Steve Jenkins, Health Officer, Summit County Public Health Department
Jim Christensen, U.S. EPA, Region VIII
John Whitehead, Environmental Scientist, Division of Water Quality.

John Whitehead

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WATER QUALITY

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UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
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Lower Silver Creek Summit County, Utah

UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY
Division of Environmental Response and Remediation
Prepared by: Ann M. Tillia

Draft:
Revision:
Final:

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1.0 INTRODUCTION

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, and in accordance with applicable provisions of National Oil and Hazardous Substance Pollution Contingency Plan (NCP), the Utah Department of Environmental Quality, Division of Environmental Response and Remediation (DERR) is conducting an Innovative Assessment (IA) of the **Lower Silver Creek (LSC Site)** east of Park City, Summit County, Utah. These activities are conducted under a cooperative agreement with the United States Environmental Protection Agency, Region VIII (EPA). A Work Plan was approved by UDEQ/DERR prior to the field activities¹.

The scope of this IA includes an on-site reconnaissance, identification and evaluation of potential exposure routes, the taking of photographs, the screening of 213 x-ray fluorescence (XRF) soil sample locations, and the following samples that were analyzed in the Utah State Division of Epidemiology and Laboratory Services: 21 soil samples, 24 sediment samples, and 27 surface water samples. The XRF screening of soil sample locations and the collection of samples for laboratory analysis is necessary to determine if hazardous materials are present on-site in concentrations that may pose a threat to human health or the environment. Metals of concern include, but are not limited to: zinc, lead, mercury, arsenic, antimony, cadmium, chromium, and copper. All laboratory samples have been analyzed for total metals. The laboratory Analytical Results Report is provided in Appendix D and the Pre-CERCLIS Screening Assessment Checklist/Decision Form is provided in Appendix F.

2.0 BACKGROUND INFORMATION

2.1 Site Location and Description

The LSC Site extends over 12 miles along the banks of Silver Creek from State Route 248 north of Richardson Flat, two miles east of Park City, downstream to the confluence with the Weber River in Wanship (Figure 1). The site has been subdivided into southern and northern portions, due to the site conditions and topography. The northern portion of the site, from Atkinson to Wanship, consists of a narrow corridor located between the lanes of Interstate 80 (I-80), which includes the Rail Tail, Silver Creek and the associated riparian habitat (Figure 2). The southern portion of the LSC Site, approximately 4.4 miles between Atkinson and State Route 248, is as much as 2,500 feet across, east to west (Figure 3).

The southern portion of the LSC Site upstream from Atkinson is quickly being surrounded by residential and commercial expansion. Several businesses, including the Summit County Sheriff's Office, Home Depot, and a Rolls-Royce Office, are located on the upland west of the southern portion of the LSC Site. Pivotal Promontory, LLC has begun construction of their private club and second-home community project, which parallels the southern portion of the LSC Site area to the east.

The headwaters of Silver Creek are located upgradient of Park City. Silver Creek is the primary drainage within the watershed downstream to the Weber River confluence in Wanship, Utah. The Weber River is a Class 4 (agricultural), 3A (cold water fishery), 2B (contact recreation), 1C (source of drinking water). Silver Creek is Class 3A, 1C, and 4 stream¹. Within the LSC site, Silver Creek has water rights beneficial uses for domestic water (Water Right 35-10477, 35-8820, 35-8829, and 35-5706), stock, irrigation, and recreation¹.

There are four municipal drinking water wells within the site area. In the northern portion of the site area near Wanship, Mutual Water Company Wells No. 2 (east) and Well No. 1 (west) supplies water to a combined total of 500 persons. In the southern portion of the site area, Mountain Regional SSD supplies water to 450 persons with water from Wells No. 3 and No. 10. In 1999 the initial pump test on Well No. 3 the water well log shows the total depth of the well is 320 feet below ground surface (bgs), the draw down was 113 feet bgs in 72 hours, the static water level was 16 feet bgs, and the well produced 130 gallons per minute (gpm)². The 1998 water well log for Well No. 10 shows the total depth of the well is 415 feet bgs, the draw down was 225 feet bgs in 72 hours, the water level flowed at the ground surface, and the well produced 400 gpm².

Silver Creek receives water from precipitation (snowmelt), groundwater, springs, and mine tunnels (Spiro Tunnel) within its basin³. Mining in the area required dewatering at depth and resulted in the construction of the Judge Tunnel near the headwaters of Silver Creek in the late 1880's. The flow from the Judge Tunnel averaged 850 gallons per minute for the years 1968 through 1991¹. A 1986 USGS report indicates Silver Creek obtains its base flow from springs in consolidated rock, and the primarily contributor is Dority Spring located north of Prospector Square flowing at a rate of 4,315 ac/ft/yr³. In addition, the 1986 USGS study found Silver Creek gains water at a rate of 5,600 ac/ft/yr from unconsolidated valley fill between a point up-gradient of Richardson Flat and a point downstream near Atkinson³.

Another study by the USGS in 1998 subdivided the Silver Creek basin with the Upper Silver Creek sub-basin extending from the headwaters to the downstream side of Prospector Square¹. The Upper Silver Creek USGS sub-basin covers 6,500 acres. The Lower Silver Creek USGS sub-basin extends from the Upper Silver Creek sub-basin downstream 2.5 miles north of Atkinson and consists of 13,700 acres. The groundwater recharge from precipitation constitutes 50 percent of the recharge for the Lower Silver Creek sub-basin. The total surface water budget for the Lower Silver Creek sub-basin is 14,000 acre-feet (ac/ft/yr), which includes 6,000 ac/ft from the Upper Silver Creek sub-basin, 3,000 ac/ft from precipitation, and 4,000 ac/ft from groundwater to Silver Creek¹.

Surface water enters the south end of the site near State Route 248 in a ditch (Pace-Homer Ditch) and flows north crossing under the Rail Trail to the east and past the Homer Spring. Downstream from Homer Spring the ditch turns west water flows through a culvert under the Rail Trail near the sample location LSC-SS-65 that is north of the section that was not sampled due to a lack of a signed Grant of Access form prior to the sampling. Silver Creek crosses under the Rail Trail just south of LSC-SS-67 and meanders north of generally gaining surface water as it flows downstream (Appendix E).

The geographic coordinates for the southern point of the site are 40° 40' 58.31" North Latitude and 111° 27' 22.44" West Longitude located in the southeast quarter of Section 35, Township 1 South, Range 4 East, Salt Lake Base and Meridian. The site extends north through parts of Sections 26, 27, 23, 22, 14, 15, 10, 11, 2, Township 1 South, Range 4 East, Sections 35, 26, 25, 24, Township 1 North, Range 4 East, and Sections 19, 20, and 17, Township 1 North, Range 5 East.

2.2 Site History and Previous Work

Mining in the Park City area began around 1869 and the first shipment of ore, 40 tons, was sent out by rail in July 1870¹. The total production of ore from the mining area for the years 1875 to 1967 was nearly 16 million tons. The highest quantity of ore mined was lead followed by zinc, gold, silver, and copper, respectfully¹. There have been as many as 10 mills operating along the banks of Silver Creek throughout the history of mining near Park City¹. Historically, the LSC Site historically received mine tailings washed down Silver Creek from the upper Silver Creek Watershed near Park City, Summit County, Utah. The majority of the milling companies along Silver Creek were located upstream from the LSC Site, which included the Grasselli, Broadwater, and E.J. Beggs mills, located in the Prospector Square area of Park City¹.

Historically, the primary mill operating within the LSC Site was the Big Four (Figure 1). The footings of the foundation of the Big Four Mill are located next to the Pace Ranch building that is adjacent to the road between the Summit County Sheriff's facility and the Promontory development project (Promontory Road) shown in Photo 3-17 (Appendix B). In the early 1900's four geologists from the east coast established the Big Four Exploration Company (Big Four) near Atkinson, seven miles northeast of Park City. In 1916, the Big Four was said to be the third largest mill in the state, consisting of a two-month stockpile of 50,000 tons of ore and the capacity to process 1,800 tons of ore tailings daily. The tailings field at the Big Four Mill site was 3.5 miles by 400 to 1200 feet wide and two inches to eight feet deep. The settling pond for the Big Four Mill held 200,000 gallons and was 100 feet in diameter by four feet deep¹. An unnamed spring located south of the historical mill site was used in the processing of ore (Figure 3)⁵. The Big Four employed over 100 men and provided a boarding house and school for their families¹. The remains of the school are found on the LSC Site as shown in Photo 3-11, Appendix B.

In October 1916, the Big Four reported processing 700 tons of ore daily with a recovery of 60 percent of the zinc, 40 percent of the lead and 35 percent of the gold and silver from the tailings. The Big Four Mill operation earnings were rated at \$1,400 per day and \$504,000 per year¹. By 1918, Big Four had over-sold company stock and the mill was sold in bankruptcy proceedings for \$35,500¹. After its' closure, the mill site was still considered to be worth milling¹. In the mid 1900's additional mill related activities on the LSC Site included removing mine tailings off-site for processing^{4,5,6}. The creation of mounds and berms on site may have been part of the preparations to remove tailing from the site for processing. In the 1940's, Silver Creek reportedly flowed milky-white as a result of tailings in the area (see Photos 3-1 and 3-4)⁴.

In the 1860's the Union Pacific Rail Road purchased land from the Atkinson family and named the site the Atkinson Station¹. In the early years, the railroad transported cattle from the Atkinson

stockyards, dairy products, and pioneers from Atkinson Station north to Coalville or west to Salt Lake City¹. Today, Atkinson is located 1.3 miles east of Silver Creek Junction (intersection of I 80 and US 40), consists of a small cattle/dairy ranch owned by the Pace family, one of the original families to settle at Atkinson. The Pace Ranch is located along the banks of Silver Creek within the riparian wetland meadow. The Pace family historically used the water provided by a nearby springs for their culinary needs⁵. Water from Silver Creek has historically been used for stock watering, irrigation, and mining/milling purposes. Property upstream and south of the Pace Ranch (Atkinson) includes parcels owned by the Gillmor family that is irrigated by Silver Creek and used for grazing cattle.

The Union Pacific Rail Road was converted to a Rail Trail in 1992 and 1993⁷. The Rail Trail begins in Park City and extends through the length of the LSC site to Wanship and beyond. Part of the construction of the Rail Trail was made possible with topsoil from the former town of Keetley, which is now the site of the Jordanelle Reservoir¹. The topsoil was placed on the top and sides of the trail upgradient of Keetley Junction (southwest of the LSC Site). The Rail Trail is used extensively as a non-motorized pathway for recreational purposes including hiking, bicycling, observing wildlife, and access to fishing Silver Creek north of Atkinson. The Rail Trail is overseen by the Utah Division of Parks and Recreation, and is part of the Historical Union Pacific Rail Trail State Park. The Rail Trail was not extensively sampled within this study and may warrant further sampling.

The UDEQ Division of Water Quality (DWQ) has monitored Silver Creek for the last 10 years and has listed Silver Creek watershed on the State of Utah's 303(d) list as impaired by zinc and cadmium. The DWQ is currently conducting a Total Maximum Daily Load (TMDL) water quality study of the Silver Creek watershed in coordination with the Upper Silver Creek Stakeholder Group. A draft of the TMDL report is expected in the summer of 2002. Eight of the ten monitoring sites identified in the TMDL study lie within the LSC Site area (the other two are at Park City and Prospector Square). Thus far, the TMDL study has detected higher concentrations of dissolved cadmium and zinc in Silver Creek in the spring than later in the year, which is attributed to mountain runoff from the winter's snow season¹. The DWQ collected flow measurements from Silver Creek in conjunction with sampling activities for this IA and the data is provided in Appendix E.

The CERCLIS-listed sites upstream, respectively, of the LSC Site are Richardson Flat (UTD980952840), Silver Creek Tailings (UTD 9809951404), Silver Maple Claims (UTD 980951396), Old Park City Dump (UTD 988078606), Marsac Mills (UT00018945054), and Empire Canyon (UT0002005981). In addition, Innovative Assessments, which are a pre-CERCLIS screening report, have been completed on several upstream mining-related sites: Ontario Mine, Ontario Mill, Silver King Mine and Mill, Treasure Hollow, California/Comstock Mill sites.

2.3 Waste Characteristics

Mine tailings generally cover the entire southern portion of the LSC Site. Tailings are readily apparent in the non-vegetated, gray colored sandy and/or gravelly mounds and low ridges (or berms) within the riparian habitat along Silver Creek particularly in the southern portion of the LSC Site (Appendix B, Log of Photographs). Elongated berms trend north-south and are found throughout the

entire southern portion of the LSC Site. Berms located along some reaches of Silver Creek and the Pace-Homer Ditch may have been created by maintenance and dredging of the waterways.

Vegetation in the southern portion of the LSC Site primarily consists of two types of grasses and one tree. A type of sedge grass is found in the drier areas surrounding the non-vegetated mounds and berms⁸. The hardy sedge (referred to as "wire grass" by the property owners) is not palatable to the livestock (primarily cattle) and grows to a height of 1 or 2 feet. The preferred grass eaten by the cattle is located in the wetter areas (in drainages; in the hummocky wet areas) and on the uplands. A sparse amount of sagebrush grows in the upland south of the pig shed, between the Rail Trail and Silver Creek (Figure 3). The identification of the plant species within the LSC Site was not part of the Work Plan. However, the Field Activities Report and Tabulated Summary provides additional information specific to the sample locations.

One of the parcels not sampled, due to the a lack of an access agreement prior to the time of sampling, is located north of the Pivotal Promontory access road and west of the historical Big Four Mill site (Photo 3-13, Appendix B). The aforementioned parcel is reportedly part of a wetland mitigation agreement to build a road across the wetlands (Promontory Road) that included the planting of several trees that died apparently due to poor soil conditions⁵. A frog species was also introduced to the mitigated wetland and apparently did not survive⁵.

The northern portion of the LSC Site area is generally a well-vegetated riparian habitat. A beaver dam was observed upstream from Alexander Canyon. Fish were observed in Silver Creek at a few sample locations downstream of the remains of the historical school house (not its original location) (Appendix A). Various bird species were observed along the banks of Silver Creek. Mine tailings were not observed more than one mile north and downstream of Atkinson during field sampling activities.

3.0 FIELD ACTIVITIES

3.1 Sampling Work Plan

The Scope of Work completed in the field activities was based on the Work Plan submitted and approved by UDEQ/DERR¹. The Work Plan included the screening of approximately 200 soil sample locations with an XRF instrument, the collection of soil samples (10 percent of the XRF screening locations), and the collection of 25 surface water samples collected concurrently with 25 sediment samples from Silver Creek. In addition, the Work Plan included the collection of three surface water and seven soil/sediment opportunity samples. Other planned activities within the scope of the Work Plan included the documentation of each sample location with a Global Positioning System (GPS). The samples collected for laboratory analysis of total metal concentration were sent to the State of Utah Division of Epidemiology and Laboratory Services, Salt Lake City, Utah.

Sampling proceeded in accordance to methods outlined in the DERR CERCLA Quality Assurance Project Plan (QAPP) for Environmental Data Operations of May, 1999. All sample containers were

obtained from State Laboratory Services. The surface water sample containers were supplied with a nitric acid preservative. All samples were preserved with ice to four degrees Celsius and retained under chain-of-custody as prescribed by the QAPP. A map of the sampling sites (Figure 2 and 3), field notes (Appendix A), and photographs (Appendix B) documenting the sampling event are provided within this report. In addition, the chain-of-custody and data validation documentation is provided in Appendix D of this report.

Soil samples were collected with a stainless steel spoon at or within 6 inches of the ground surface, and placed directly in an eight-ounce glass sample jar. An adequate supply of disposable and previously decontaminated sampling equipment was supplied at the site to avoid the need for field decontamination. All disposable sampling equipment was removed from the site and disposed of as non-hazardous. Excess soil and sediment from the samples was returned to its original location.

The 25 surface water samples and sediment samples were collected concurrently from Silver Creek at approximately 0.5-mile intervals within a 7.5-hour period. Flow measurements were taken and water data was collected concurrently with the sampling of Silver Creek. During a two-week period, the location of 213 soil samples analyzed with an XRF were selected in a random and biased fashion. All soil sampling was conducted in non-vegetated and vegetated areas alternating sample locations between the lower elevation riparian areas and the higher ground (uplands) generally west of the Rail Trail. The Rail Trail was not extensively sampled within this study and may warrant further sampling (Photo 3-5, XRF 79 in Table 1).

Access to the various properties was granted prior to sampling. Landowners signed a DERR Grant of Access to Property form or granted verbal access and were apprised of their right to obtain split-samples (Appendix C). The option to collect a split samples was exercised by one property owner, Park City Municipal Corporation. A Health and Safety briefing was held for the DERR personnel on the day of sampling prior to sampling the site. There were no safety matters that became a problem during the sampling event.

3.2 Deviations from the Work Plan

Deviations from the Work Plan are as follows:

- All samples were analyzed for total metals. The option to not collect samples for analysis of dissolved metal as specified in the Work Plan was taken, based on the suspended sediment load of the surface water observed in the field.
- A field screening of the sediment samples with the XRF instrument was not completed due of the time constraints in the field and availability of data, which is provided by the laboratory analysis of the samples.
- Of the 25 surface water samples designated in the Work Plan to be collected from Silver Creek, three samples (LSC-SW- 04, LSC-SW- 05, and LSC-SW-06) were not collected due to a lack of access to the property prior to the time of sampling (11/02/01). Sample LSC-

SW-06 was reassigned as an opportunity sample that was collected from the unnamed spring located south of the historical Big Four Mill.

- Three of the 25 sediment samples (LSC-SD-34, LSC-SD-35, and LSC, SD-36) designated to be collected concurrently with the surface water samples (LSC-SW- 04, LSC-SW- 05, and LSC-SW-06), were not collected because access was not obtained prior to sampling.
- Surface water sample LSC-SW-26 was designated a field duplicate for Quality Assurance/Quality Control purposes to be collected concurrently with sample LSC-SW-04, however, it was not collected because access to the property was not obtained prior to sampling activities. The surface water sample LSC-SW-26 was not re-assigned to another sample location.
- Sample LSC-SD-77 was designated the opportunity sediment sample to be collected concurrently with LSC-SW-29 from the Alexander Canyon Creek at the confluence with Silver Creek was damaged (the glass sampling jar broke) in transport between the field and the DERR office. The sediment sample LSC-SD-77 was dried in the office and analyzed with the XRF (the analysis is provided in Table 1.0, XRF 292 and 293).

3.3 Sampling Activities

The sampling and field observations of the LSC Site occurred on eight days in November 2001. A Field Activity Report and Tabulated Summary, which includes water data collected on November 2, is provided in Appendix A of this report. In addition, water flow data was collected during the November 2 field activities and is provided in Table 6.

On November 2, 2001, 22 surface water samples were collected concurrently with 22 sediment samples from Silver Creek (Figure 2 and 3). Additional sampling included the collection of field duplicate surface water sample LSC-SW-27 collected concurrently with sample LSC-SW-19, three surface water/sediment opportunity samples (LSC-SW-28/SD-76, LSC-SW-29/SD-77, and LSC-SW-30/SD-79), and one opportunity soil sample (LSC-SS-78).

Field activities on November 6, 8, 9, 13, 14, 15, and 19, 2001 were conducted in the southern portion of the LSC Site starting near Atkinson and proceeding south to State Route 248. Sampling included collecting soil samples for analysis by the State laboratory and sampling the soil in the field with the XRF (Figure 3). In addition, one opportunity surface water sample (LSC-SW-06) was collected from the unnamed spring south of the historical Big Four Mill site. A total of 229 XRF files were created, and includes four files associated with sediment sample LSC-SD-77 initially intended to be analyzed by the laboratory. Of the remaining 225 samples, 12 files were instrument calibrations and the remaining 213 files were comprised of soil analysis data.

Of the 213 samples analyzed with the XRF, data from eight samples are not considered valid due to the low analysis time (a count of less than 60, the average count was 200). Six of the eight low-count samples shared the same GPS data with another acceptable XRF sample. In addition, four

XRF samples have no GPS data, and 10 XRF samples were located within a few feet of another XRF sample and share the same GPS data. Therefore, results consist of a total of 207 valid XRF soil sample analyses with corresponding GPS data (includes 10 XRF samples that share the same GPS data as another XRF sample). All XRF analytical data are provided in Tables 1 and 2. The Field Activities report in Appendix A provides additional sampling information.

4.0 SAMPLING RESULTS

The XRF analysis results are illustrated in Figures 4 through 8 and summarized in Tables 1 and 2. Figures 9 through 12 illustrate the laboratory samples results that are summarized in Tables 3, 4 and 5. The actual Laboratory Analytical Reports are provided in Appendix D. There are 15 metals in the soil samples that were analyzed by both the XRF and State Laboratory (Tables 5 and 6). A comparison of the XRF analysis and the laboratory analysis of the soil at the same location is summarized in Table 6. The factor of error in the analysis of XRF samples compared to laboratory-analyzed samples is generally less than ten percent at low concentrations and may be more than 50 percent at high concentrations. Figures 13, 14 and 15 illustrate the approximate location of the concentration contours for lead, mercury, and zinc using the data from the soil samples analyzed by the XRF (created by the Surfer groundwater modeling computer program and ArcView computer program).

The surface water and sediment sample analytical results were compared to available benchmarks based on EPA's June 1996 Superfund Chemical Data Matrix (SCDM) with the exception of the benchmark for lead in a soil medium. A soil-lead hazard standard of 400 parts per million (ppm) for play areas (1,200 ppm in non-play areas) was used in this report based on an EPA Guidance 40 CRF Part 745, January 5, 2001. There are no benchmarks established for sediment and background samples were not collected as part of this IA.

Two discrepancies found in the State Laboratory Analysis Report pertain to samples LSC-SW-06 and LSC-SW-15. The analysis results of sample LSC-SW-06 (laboratory sample 200109921) were labeled in ppm units, and the actual units were parts per billion (ppb). The laboratory reported 10 ppb of nickel for sample LSC-SW-15 (laboratory sample 200109931). However, all of the other surface water sample results have a nickel concentration less than 10, therefore the sample location could be re-sampled to confirm the results. The sample analysis discrepancies were discussed with the laboratory and adjustments were made in summarizing the data. Some of the units of measurement of the surface water samples were received from the laboratory in ppm and converted to ppb for consistency purposes within the summarized table (Table 3).

4.1 XRF Sampling Results

The XRF instrument analyzes metals by either a calibration reference to the cadmium source (Table 1), or an americium source (Table 2). Sediment sample LSC-SD-77 and XRF soil sample 289 were analyzed using both XRF sources. The remaining XRF soil samples were analyzed with the cadmium source. The analytes of the XRF soil samples with concentrations that exceeded a hazard

standard or a SCDM benchmark are lead, arsenic, mercury, zinc, manganese, chromium, antimony, and cadmium.

The XRF analysis detected lead above the detection limit at every location and nearly every location showed lead results exceeding the hazard standard of 400 ppm (Figure 4 and 13). The highest lead concentration was 37,196.8 ppm detected in XRF sample 283 collected north of Atkinson on the same mound as sample LSC-SS-78 that had a (laboratory analyzed) concentration of 36,100 ppm. The lowest lead concentration detected was 23 ppm in XRF sample 220 collected west of Silver Creek and south of sample LSC-SS-70 (Figure 3).

The XRF analysis detected elevated arsenic concentrations at nearly as many sample locations as it did elevated lead concentrations (Figure 5). The highest arsenic concentration detected was 2,160 ppm in the XRF sample 173 (soil sample LSC-SS-66, 913 ppm). The lowest arsenic concentration detected by the XRF was less than the detection limit. The error factor value for some XRF samples may have exceeded the benchmark values (notated in brown in Table 1). Also noted is the interference in the XRF analysis of arsenic and lead. In analyzing the two metals, if the XRF detects high concentrations of lead it will also detect high concentrations of arsenic, which may not accurately reflect actual arsenic concentrations. A comparison of the variance in the arsenic concentrations detected by the laboratory and XRF analyses was less than 10 percent for 7 of the 21 samples, between 10 to 50 percent for 9 of 21 samples, and between 50 to 100 percent for 5 of the 21 samples. A comparison of XRF and laboratory soil sample results is summarized in Table 6.

The majority of the XRF samples with mercury concentrations above the benchmark of 23 ppm were collected north of Homer Spring (Figure 6 and 14). Photo 4-14 in Appendix B shows the sampling area and several non-vegetated mounds. The highest mercury concentration detected by the XRF was 149 ppm (XRF 240) at a location south of sample LSC-SS-71, which had a mercury concentration of 144.2 ppm (Figure 3). The lowest mercury concentration detected by the XRF was less than the detection limit (Table 1).

The location of XRF samples with zinc concentrations that exceeded the benchmark of 23,000 ppm were primarily collected from an area containing several non-vegetated mounds near Homer Spring (Figure 7 and 15). The highest zinc concentration detected by the XRF was 96,460.8 ppm in XRF sample 172 collected northeast of sample LSC-SS-66 and XRF 173 that had zinc concentrations of 48,700 ppm and 53,860 ppm, respectively. A number of the XRF samples had zinc concentrations above the level of detection, but less than the benchmark. The lowest zinc concentration detected by the XRF was 181 ppm in XRF sample 220 (collected west of Silver Creek and south of sample LSC-SS-70), which also contained the lowest lead concentration (23 ppm).

There are a total of 11 XRF soil samples with chromium concentrations exceeding the benchmark of 390 ppm (Figure 8). The highest chromium concentration detected by the XRF was 3696.6 ppm (XRF 187) in an upland area west of the Rail Trail and south of sample LSC-SS-66. Several of the soil samples analyzed by the XRF had chromium concentrations less than the detection limit.

4.2 Soil Sampling Results

A summary of the laboratory analysis of the soil samples is provided in Table 5 and illustrated in Figures 9 through 12. A comparison of the XRF and laboratory analysis of the soil samples is provided in Table 6. The laboratory results for the soil samples show metal concentrations exceeded the hazard standard or SCDM benchmark for lead, arsenic, mercury, zinc, antimony, and cadmium.

Of the 21 soil samples analyzed by the laboratory, 20 had lead concentrations exceeding 400 ppm. Sample LSC-SS-61 collected near the unnamed spring south of the historical Big Four Mill site, had a lead concentration was 8.56 ppm. The highest concentration of lead was 36,100 ppm detected in sample LSC-SS-78 collected from the mound adjacent to Silver Creek north of Atkinson. Generally, higher lead concentrations were detected in samples collected west and north of Homer Spring and concentrations were lower in samples collected immediately south of Atkinson than those collected near State Route 248. Samples LSC-SS-64 (22,300 ppm) and LSC-SS-65 (26,000 ppm) were collected immediately north and south, respectively, of the section not sampled (due to a lack of access to the property). Lower lead concentrations (1040 ppm to 3360 ppm) were detected in samples collected from the upland between Silver Creek and the Rail Trail (north and south of Promontory Road).

All 21 soil samples analyzed by the laboratory had arsenic concentrations above the SCDM benchmark of 23 ppm. The soil samples with high lead concentrations similarly have high arsenic concentrations with the exception of sample LSC-SS-61, which had a low lead concentration (8.56 ppm), but an elevated arsenic concentration (77 ppm). The highest arsenic concentration was detected in sample LSC-SS-78 at 870 ppm, and the lowest concentration was detected in sample LSC-SS-64 at 48 ppm. Sample LSC-SS-78 was collected from a mound adjacent to Silver Creek and downstream from Atkinson. Sample LSC-SS-64 was collected from the upland adjacent to the Rail Trail and south of the historical Big Four Mill site.

The location of soil samples analyzed by the laboratory with mercury concentrations exceeding SCDM (23 ppm), are provided in Figure 9. The area immediately north of Homer Spring contains five of the seven sample locations with mercury concentrations exceeding SCDM. Sample LSC-SS-61 collected from the unnamed spring south of the Big Four Mill site had a mercury concentration of 32 ppm. The highest mercury concentration of 144 ppm was detected in sample LSC-SS-71.

Eleven of 21 soil samples had zinc concentrations that exceeded SCDM (23,000 ppm), and an additional sample, LSC-SS-56, had a concentration (22,700 ppm) just under SCDM. The highest zinc concentration was detected in sample LSC-SS-65 at 60,400 ppm. The locations of the soil samples with high zinc concentrations are generally found in the riparian area (Figure 10)

Antimony concentrations exceeded the SCDM benchmark of 31 ppm in all soil samples except sample LSC-SS-64, which had a concentration of 22 ppm. The highest concentration of antimony was detected in sample LSC-SS-66 at 568 ppm (Figure 11).

Cadmium concentrations exceeded the SCDM benchmark of 39 ppm in 15 of the 21 soil samples. Elevated cadmium concentrations were generally detected in samples collected in the riparian area (Figure 12). The highest cadmium concentration of 295 ppm was detected in sample LSC-SS-65 (Figure 3).

4.3 Sediment Sampling Results

A summary of the results of the laboratory analysis of the 24 sediment samples is provided in Table 4. There are no SCDM benchmarks for sediment samples and no background samples were collected. The sediment samples and surface water samples were collected concurrently from Silver Creek and are discussed in Section 5.0 of this report (Figures 2 and 3).

All 27 sediment samples had lead concentrations above 400 ppm. The highest lead concentration detected was 13,700 ppm in sample LSC-SD-38 (SW-08) collected downstream from the historical Big Four Mill site. The most upstream sample location, sample LSC-SD-31 (SW-01), had a lead concentration of 7,650 ppm. A lead concentration of 752 ppm was detected in sample LSC-SD-76 (SW-28) collected immediately upstream from the Silver Creek and Weber River confluence.

All 27 sediment samples had arsenic concentrations above 23 ppm. The lowest arsenic concentration was detected in sample LSC-SD-50 (SW-20) at 28 ppm. The highest arsenic concentration was detected in sample LSC-SD-40 (SW-10) at 555 ppm. The arsenic concentrations in the sediment samples increased downstream from State Route 248 with sample LSC-SD-31 (SW-01) at 328 ppm to 555 ppm detected in sample LSC-SD-40 (SW-10) near Atkinson. Downstream from Atkinson, sample LSC-SD-41 (SW-11) had an arsenic concentration of 252 ppm and arsenic concentrations generally continued to decrease downstream to Wanship (LSC-SD-55, 38.5 ppm).

The mercury concentrations in sediment samples LSC-SD-40 (SW-10) and LSC-SD-53 (SW-23) were 33.5 ppm and 34.2 ppm, respectively. In all of the other sediment sample mercury concentrations did not exceed 11.1 ppm.

The zinc concentrations in two sediment samples were above 23,000 ppm. Samples LSC-SD-39 (SW-09) and LSC-SD-40 (SW-10) had a zinc concentration of 27,300 ppm and 30,300 ppm, respectively. A zinc concentration of 22,200 ppm was detected in sample LSC-SD-31 (SW-01) near State Route 248. The zinc concentration near the Weber River and Silver Creek confluence was 1,430 ppm in sample LSC-SD-76 (SW-28).

Antimony concentrations were above 31 ppm in 13 of the 24 sediment samples. Near State Route 248, sample LSC-SD-31 (SW-01) had an antimony concentration of 111 ppm. An elevated antimony concentration of 338 ppm (LSC-SD-40, SW-10) was detected in a sample collected from the center of the southern portion of the LSC Site. The downstream antimony sediment concentration dropped off to less than 12 ppm with sample LSC-SD-46 (SW-16) located 3 miles downstream from Atkinson.

Cadmium concentrations were above 39 ppm in 12 of 24 sediment samples. Sample LSC-SD-31 (SW-01) collected near State Route 248 had a cadmium concentration of 122 ppm. Downstream from State Route 248 the concentrations dipped and then rose to 145 ppm with sample LSC-SD-40 (SW-10), and then dropped to 11.4 ppm in sample LSC-SD-46 (SW-16). In addition, an elevated cadmium concentration of 64.4 ppm was detected in sample LSC-SD-55 (SW-25) collected in Wanship.

4.4 Surface Water Sampling Results

Surface water samples and sediment samples were collected concurrently from Silver Creek and analyzed by the State Laboratory. A summary of the results of the laboratory analysis of the 27 surface water samples is provided in Table 3. Surface water sample locations are shown in Figures 1 and 2. Surface water samples had lead, antimony, and cadmium concentrations that exceeded the SCDM maximum contaminate level (MCL) for drinking water. In addition, lead, mercury, zinc, copper, chromium, and cadmium concentrations exceeded the SCDM environmental freshwater benchmark for the acute and chronic ambient water quality criteria (AWQC) and the acute and chronic aquatic life advisory concentrations (AALAC).

Twenty-three of the 27 surface water samples had lead concentrations exceeding the drinking water benchmark of 15 ppb. Generally, the surface water lead concentrations detected in the Silver Creek samples decreased downstream from sample LSC-SW-10 with a high of 260 ppm collected near the old school house to sample LSC-SW-28 with 15 ppb collected upstream of the Weber River confluence. The three samples collected between Homer Spring and State Route 248 detected lead concentrations that increased downstream from 18 ppb to 33 ppb. Samples with lead concentrations below the drinking water benchmark are sample LSC-SW-29 (Alexander Canyon Creek), sample LSC-SW-06 (the unnamed spring south of the Big Four Mill site), and sample LSC-SW-08 and LSC-SW-09 (collected upstream from the water treatment facility). Twenty-five surface water samples exceeded the environmental freshwater benchmark for lead.

All samples had zinc concentrations that exceeded the environmental freshwater benchmark of 110 ppb (there is no drinking water benchmark for zinc). Mercury concentrations were less than the drinking water benchmark of 2 ppb, however, the limit of detection (0.2 ppb) was greater than the freshwater benchmark of 0.012 ppb. Copper concentrations were less than the benchmarks except for sample LSC-SW-10 (26.4 ppb), which exceeded the environmental freshwater benchmark of 12 ppb. Chromium concentrations were less than the benchmarks except for sample LSC-SW-15 (18.8 ppb), which exceeded the environmental freshwater benchmark of 11 ppb. The thallium drinking water benchmark (0.5 ppb) was less than the limit of detection (1 ppb).

Antimony concentrations exceeded the drinking water benchmark of 6 ppb in 25 of the 27 surface water samples. The antimony concentrations decreased downstream from a high of 37 ppb in sample LSC-SW-07 collected south of the Summit County Sheriff's facilities to 14.7 ppb in sample LSC-SW-28 collected above the confluence with the Weber River. Antimony concentrations of less than 3 ppb were detected in samples LSC-SW-06 (unnamed spring south of historical Big Four Mill site)

and LSC-SW-29 (Alexander Canyon). The three samples collected between Homer Spring and State Route 248 had antimony concentrations between 7.7 ppb to 7.2 ppb.

The cadmium concentration in all the surface water samples exceeded the environmental freshwater benchmark of 1.1 ppb. Cadmium concentrations exceeded drinking water benchmark of 5 ppb in three samples (LSC-SW-07/08/09) and nearly so in a fourth sample (LSC-SW-10). The highest cadmium concentration detected was 7 ppb in sample LSC-SW-08. The locations of the samples with high cadmium concentrations are between a point immediately upstream from the unnamed spring (near the Big Four Mill site) and Atkinson.

5.0 SUMMARY AND CONCLUSIONS

The headwaters of the Silver Creek Watershed are in the mountains above Park City. The LSC Site encompasses the lower reaches of Silver Creek and the surrounding riparian habitat as the creek meanders more than 12 miles between State Route 248 and the confluence with the Weber River in Wanship. The DWQ has monitored Silver Creek for the last 10 years and has listed Silver Creek on the State of Utah's 303(d) list as impaired by zinc and cadmium. Apparent mine tailings had previously been observed within the LSC Site. The DERR has investigated this site to assess possible contamination resulting from historical mining operations in the area. There are several upstream pre-CERCLIS and CERCLIS-listed sites either previously or currently under investigation.

Mining in the Park City area began around 1869 and the first shipment of ore, 40 tons, was sent out by rail in July 1870. The total production of ore from the mining area for the years 1875 to 1967 was nearly 16 million tons. There have been as many as 10 mills operating along the banks of Silver Creek throughout the history of mining near Park City. The majority of milling companies along Silver Creek were located upstream of LSC. Historically, the primary mill operating within the LSC Site was the Big Four Mill. The footings of the foundation of the Big Four Mill are located next to Pace Ranch building adjacent to the road between the Summit County Sheriff's facility and the Pivotal Promontory, LLC development project (Promontory Road) (Photo 3-17, Appendix B).

In 1916, the Big Four Mill was said to be the third largest mill in the state, consisting of a two-month stockpile of 50,000 tons of ore and the capacity to process 1,800 tons of ore tailings daily. The tailings field at the Big Four Mill site was 3.5 miles by 400 to 1200 feet wide and two inches to eight feet deep. The settling pond for the Big Four Mill held 200,000 gallons and was 100 feet in diameter by four feet deep¹. By 1918, Big Four had over-sold company stock and the mill was sold in bankruptcy proceedings for \$35,500¹. After its closure, the mill site was still considered to be worth milling¹. In the mid 1900's additional mill related activities on the LSC Site included removing mine tailings off-site for processing^{4, 5, 6}. The creation of mounds and berms on-site may have been part of the preparations to remove tailing from the site for processing. In the 1940's, Silver Creek reportedly flowed milky-white as a result of tailings in the area (see Photos 3-1 and 3-4)⁴.

Most of the property within the LSC Site is privately owned and fenced (for cattle) along the Rail Trail. In 1992 and 1993, the Rail Trail was constructed on the historical Union Pacific Rail Road and is under the direction of the Utah Division of Parks and Recreation. The Rail Trail starts in Park City, crosses over State Route 248 and continues north throughout the length of the LSC Site downstream to Wanship and beyond. The Rail Trail is open to the public, and is used frequently as a non-motorized pathway for recreational purposes including hiking, bicycling, observing wildlife, and access to fishing Silver Creek north of Atkinson. The Rail Trail was not extensively sampled within this study and may warrant further sampling (Photo 3-5, XRF 79 in Table 1).

The site has been subdivided into southern and northern portions, due to the site conditions and topography. Mine tailings generally cover the entire southern portion of the LSC Site (State Route 248 to Atkinson). Tailings are readily apparent in the non-vegetated, gray colored sandy or gravelly mounds and low ridges (or berms) within the riparian habitat along Silver Creek (Appendix B, Log of Photographs). The vegetation in the southern portion of the LSC Site (upstream from Atkinson) vegetation primarily consists of a sedge grass (locally referred to as "wire-grass") that is not palatable to the livestock (primarily cattle) and is rarely eaten by them. The northern portion of the LSC Site area is generally a well-vegetated riparian habitat. Mine tailings were not observed more than a mile downstream from Atkinson during field activities.

Sampling activities occurred on eight days in November 2002. Sampling included a total of 207 valid XRF soil samples and the concurrent collection of 21 soil samples (approximately 10 percent of the XRF samples) for laboratory analysis. A total of 22 surface water and sediment samples were collected concurrently from Silver Creek within a 7.5-hour period. In addition, flow measurements of Silver Creek were taken (Appendix E), and opportunity samples of the surface water and sediment were collected.

The concentration of metals in the soil samples detected by the XRF were similar to the results of the laboratory analysis with consideration of the factor of error and variance associated with XRF analyses of high concentrations. The majority of soil and XRF samples with elevated concentrations of metals were collected from the area west of Homer Spring and north through the center of the site to an area west of the old school house site (Figure 3).

The surface water samples exceeded SCDM drinking water benchmarks (MCL) for lead, antimony, and cadmium. In both the sediment and surface water samples, similarly elevated concentrations of lead, antimony, and cadmium were detected. The sediment and surface water sample concentrations were generally highest in samples collected west of the old school house and higher in samples collected near State Route 248 than those collected near Wanship. Fish were observed in Silver Creek upstream from Wanship up to the reach adjacent to the old school house (Figure 3), which is the area with the highest metal concentrations detected in the sediment samples and surface water samples.

The primary targets of concern are the persons using the Rail Trail and fishing in Silver Creek. The site does not contain residences, however, a high-end residential development (Promontory project)

to the east is currently being developed and commercial and government facilities are located to the west of the site. Other important issues related to this site include the environmental impacts of heavy metal in the ecological system, specifically, the water quality of Silver Creek and the migration of contaminants to the Weber River. Therefore, the primary contamination pathways of concern are the surface water and contact with the soil either directly or by entrainment. The groundwater pathway may be of concern by association with the wetlands through the recharge/discharge cycle. At the time of this report, there are four municipal wells within the site serving a combined population of 950 persons.

The completed "Pre-CERCLIS Screening Assessment Checklist/Decision Form" is enclosed in this report as Appendix E. This checklist concludes with the recommendation that the LSC Site should be entered into CERCLIS, and further assessment under CERCLA is recommended based on the analytical results of samples collected on the site.

REFERENCES

1. Tillia, Ann M.; 2001; Lower Silver Creek Innovative Assessment Work Plan; Utah Department of Environmental Quality/Division of Environmental Response and Remediation.
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3. Utah Department of Natural Resources (UDEQ/DERR) and the United States Geological Survey (USGS); 1986; Water Resources of the Park City Area, Utah With Emphasis on Ground Water; Technical Publication No. 85.
4. Pace, Standley; 2001; property owner; Personal Communication.
5. Pace, Gale; 2001; property owner; Personal Communication.
6. Gillmor, Nadine; 2001; property owner; Personal Communication.
7. Knudsen, John; 2002; Utah Department of Natural Resources, Division of Parks and Recreation; Personal Communication.
8. Jensen, Kevin B.; 2001; Utah State University Research Plan Geneticist, United States Department of Agriculture Research Service; Personal Communication with Jason Murdock of UDEQ/DERR.

TABLES

Table 1 UDEQ/DERR Lower Silver Creek IA
XRF Soil Sample Results for the (Cd) Cadmium Source

Notes	Analysis Date:	XRF #:	Mo (ppm) (SCDM=390)	+/-	Zr (ppm) (SCDM=ND)	+/-	Si (ppm) (SCDM=47,000)	+/-	Rb (ppm) (SCDM=ND)	+/-	Pb (ppm) (SCDM=400)	+/-	Se (ppm) (SCDM=390)	+/-	As (ppm) (SCDM=23)	+/-	Hg (ppm) (SCDM=23)	+/-	Zn (ppm) (SCDM=23,000)	+/-	Cu (ppm) (SCDM=ND)	+/-	Ni (ppm) (SCDM=1,600)	+/-	Co (ppm) (SCDM=ND)	+/-	Fe (ppm) (SCDM=ND)	+/-	Mn (ppm) (SCDM=11,000)	+/-	Cr (ppm) (SCDM=390)	+/-
65 ND, set up	11/8/2001 11:03	65	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
66	11/8/2001 11:08	66	<LOD*	6	<LOD*	2.25	43.1	2.3	4	2.2	505.2	13.7	<LOD*	4.2	<LOD*	17.7	<LOD*	6.15	1729.6	33.1	69.6	26.5	<LOD*	37.05	<LOD*	49.65	2889.6	88	574.8	75.4	<LOD*	100.2
67	11/8/2001 11:21	67	<LOD*	7.95	<LOD*	3.45	32	3.2	<LOD*	4.5	1849.6	33.5	<LOD*	7.05	64.1	28	<LOD*	12.15	4169.6	66.7	206.8	49.1	<LOD*	55.95	<LOD*	78.9	4528	140	394.6	100	<LOD*	142.05
68 GPS, no notes	11/8/2001 11:33	68	<LOD*	16.05	<LOD*	8.25	122.7	8.9	<LOD*	10.65	5238.4	99.4	<LOD*	17.25	<LOD*	110.85	<LOD*	32.4	19289.6	280	654.8	160	<LOD*	141.75	<LOD*	180	8364.8	310	820	240	383.4	240
69 GPS, no notes	11/8/2001 11:46	69** (SS-56)	<LOD*	13.8	62.7	5.3	125.5	7.2	<LOD*	8.7	4640	74.8	<LOD*	13.5	322.4	59.1	<LOD*	26.7	18598.4	220	678	130	<LOD*	127.65	<LOD*	210	21696	420	1929.6	290	546.4	230
70	11/8/2001 11:59	70	19.6	9.7	43.2	4.8	71.3	6.2	<LOD*	8.25	3737.6	68.3	<LOD*	12.75	297.8	55.4	<LOD*	24.45	11398.4	170	504	110	<LOD*	119.1	<LOD*	195	16089.6	370	1580	260	<LOD*	315
71	11/8/2001 12:36	71	9.6	4.9	<LOD*	2.1	20.1	2.2	<LOD*	3.15	182.7	10.8	<LOD*	4.95	41.4	10.2	<LOD*	7.35	2499.2	47.9	68.6	36.3	<LOD*	44.4	<LOD*	54.45	2280	96	578.8	87.9	<LOD*	125.25
72	11/8/2001 12:46	72** (SS-57)	<LOD*	16.05	21	5	68.1	6.8	<LOD*	9.3	1649.6	55	<LOD*	12.75	92.3	46.6	<LOD*	25.35	12595.2	220	323	140	<LOD*	131.55	<LOD*	210	10899.2	380	1960	300	<LOD*	375
73	11/8/2001 12:59	73	<LOD*	10.05	52.2	3.5	83.8	4.3	13.1	3.9	1109.6	28.2	<LOD*	7.05	67.2	24.2	<LOD*	11.85	3808	69.1	146.7	51.6	<LOD*	68.85	<LOD*	106.35	7558.4	200	653.6	140	535.2	140
74	11/8/2001 13:07	74	31.6	11.6	61.1	5.9	105.7	7.7	21.5	7	3228.8	72.5	<LOD*	14.25	170.6	58.6	<LOD*	25.05	8659.2	160	380.4	110	<LOD*	128.7	<LOD*	225	16192	430	1020	280	<LOD*	360
75	11/8/2001 13:35	75	<LOD*	44.7	65.6	18.6	92	22.7	<LOD*	29.85	2840	210	<LOD*	43.65	<LOD*	270	<LOD*	85.35	13593.6	660	<LOD*	615	<LOD*	420	<LOD*	570	11897.6	1100	1629.6	849.6	<LOD*	1080
76	11/8/2001 13:50	76	<LOD*	22.95	56.6	8	72.9	9.9	<LOD*	14.25	4278.4	120	<LOD*	21.3	<LOD*	133.95	<LOD*	39.15	12998.4	280	563.2	180	<LOD*	195	<LOD*	315	17088	590	1739.2	420	<LOD*	480
77	11/8/2001 13:57	77	<LOD*	15.15	40	5.1	58.1	6.3	<LOD*	9.15	3779.2	72.8	<LOD*	13.95	217.6	58.5	<LOD*	28.05	20096	250	700.4	140	<LOD*	133.5	<LOD*	195	14694.4	370	1920	280	564.4	250
78	11/8/2001 14:04	78	<LOD*	59.25	100.2	24.3	89	28.1	<LOD*	39.9	5859.2	350	<LOD*	65.25	<LOD*	405	<LOD*	113.55	13990.4	740	1069.6	480	<LOD*	555	<LOD*	990	26982.4	1899.2	2188.8	1200	<LOD*	1170
79	11/8/2001 14:13	79	34.4	7	202	4.9	322.6	6.3	26.8	4	230.8	12.1	<LOD*	5.25	32.1	11	<LOD*	7.05	530	24.4	42.1	26.7	<LOD*	66.3	<LOD*	132	17497.6	260	480	160	502	120
80 low count, same GPS as 81	11/8/2001 14:48	80	<LOD*	26.55	63.7	10.8	141.6	15	30.4	13.2	3747.2	140	<LOD*	24.15	<LOD*	165	<LOD*	44.55	4819.2	210	538.8	160	<LOD*	195	<LOD*	330	10195.2	590	<LOD*	585	<LOD*	495
81	11/8/2001 14:49	81	<LOD*	13.05	54.7	5.2	151.2	7.6	42.5	6.9	3888	70	<LOD*	12.3	103.9	55.3	<LOD*	21.6	4899.2	100	454	78.1	<LOD*	98.7	<LOD*	165	10598.4	290	469.2	200	<LOD*	240
82	11/8/2001 15:01	82	<LOD*	13.35	73.9	5.4	92.4	6.7	16.6	6.1	5587.2	82.6	<LOD*	15	741.6	65.9	<LOD*	26.4	10099.2	150	557.2	98.4	<LOD*	119.1	273	150	22592	420	1549.6	280	<LOD*	315
83	11/8/2001 15:11	83** (SS-58)	<LOD*	16.05	52.8	6.4	190.3	9.8	18.2	7.6	4000	84.3	<LOD*	15.45	220.8	67.2	<LOD*	29.55	12697.6	210	328.6	130	<LOD*	135	233.4	140	12800	390	891.2	270	<LOD*	330
84	11/8/2001 15:28	84	<LOD*	13.95	11.5	5.1	118.3	8.1	13.8	7.1	4569.6	85.3	<LOD*	15.45	144.3	66.7	<LOD*	30.9	19596.8	260	680	150	<LOD*	133.05	215.8	130	11398.4	340	1120	250	<LOD*	330
85	11/8/2001 15:37	85	<LOD*	12.15	72.4	4.5	61.1	5	11.6	4.9	2960	52.5	<LOD*	10.8	130	42.7	<LOD*	19.8	11097.6	140	415.2	91.7	<LOD*	101.85	<LOD*	180	16793.6	330	1229.6	220	<LOD*	255
86	11/8/2001 15:45	86	<LOD*	13.2	62.5	4.6	64.2	5.2	14.6	5.2	2108.8	47.3	<LOD*	10.2	77.5	39.2	<LOD*	18.75	9228.8	140	250.2	89.9	<LOD*	96	<LOD*	150	10598.4	280	1200	210	<LOD*	270
87	11/8/2001 15:54	87	<LOD*	13.65	62.6	4.8	67.3	5.4	15.9	5.5	2129.6	48.6	<LOD*	10.95	69.1	40.3	<LOD*	20.55	12896	170	436.4	110	<LOD*	107.25	<LOD*	165	11596.8	300	1409.6	230	506.8	200
88 same GPS as X89	11/8/2001 16:03	88	<LOD*	16.95	78.3	6.3	72.8	7	16	6.9	2659.2	66.9	<LOD*	14.7	198.4	55.6	<LOD*	26.25	10995.2	190	362.4	120	<LOD*	133.35	<LOD*	225	15590.4	430	1520	300	<LOD*	360
89	11/8/2001 16:08	89	<LOD*	23.7	82.8	11.1	250	16.9	82.4	15.3	14092.8	250	<LOD*	32.1	<LOD*	240	<LOD*	58.2	15692.8	310	791.6	200	<LOD*	210	<LOD*	330	19200	630	1580	430	<LOD*	510
90	11/8/2001 16:14	90	<LOD*	15.6	32.3	5.7	140	8.6	<LOD*	10.65	5088	90.7	<LOD*	15.45	<LOD*	102.45	<LOD*	31.2	22092.8	280	650	160	<LOD*	141.3	<LOD*	210	14195.2	380	1060	270	<LOD*	345
91	11/8/2001 16:23	91	<LOD*	17.55	58.5	6.1	57.8	7.2	<LOD*	10.35	3968	85.5	<LOD*	16.05	196.9	67.9	<LOD*	29.7	10195.2	190	415.2	120	<LOD*	145.8	295.8	170	19097.6		1569.6		<LOD*	
92 ND, set up	11/8/2001 16:07	92	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
93 ND set up	11/8/2001 16:24	93	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
94	11/8/2001 16:36	94	<LOD*	7.35	13.3	2.2	107.5	3.8	14.8	3.1	126.4	9.3	<LOD*	4.65	<LOD*	12.3	<LOD*	5.4	207.8	16.9	<LOD*	30	<LOD*	41.25	<LOD*	53.4	2209.6		185.6		<LOD*	
95	11/8/2001 16:48	95	<LOD*	8.7	16.2	3	190.9	5.7	20.9	4.1	284	14.8	<LOD*	5.7	<LOD*	19.35	<LOD*	7.5	664.4	29.9	56	28.9	<LOD*	52.2	<LOD*	81.6	4137.6		546.4		<LOD*	
96	11/8/2001 16:56	96	27	11.3	140.5	7.3	204.7	9	78.7	9	1369.6	45.7	<LOD*	10.8	<LOD*	57.75	<LOD*	17.55	1926.6	72.2	169	62.7	<LOD*	114.15	<LOD*	225	16793.6		694.8		<LOD*	
97	11/8/2001 11:05	97	<LOD*	19.65	131.8	8.7	149.3	10.2	82.6	11.1	4038.4	95.6	<LOD*	17.85	115.2	75.3	<LOD*	29.85	4809.6	130	418.8	100	<LOD*	149.4	<LOD*	270	17894.4	520	1149.6	340	<LOD*	390
98 low count, no notes	11/8/2001 11:07	98	<LOD*	106.45	141.7	45.8	135.7	51.6	<LOD*	76.65	4179.2	500	<LOD*	76.8	<LOD*	585	<LOD*	165	4720	690	<LOD*	825	<LOD*	840	<LOD*	1424.4	16499.2	2600	<LOD*	2250	<LOD*	1950
99	11/8/2001 11:19	99** (SS-59)	17.7	8.3	203.6	5.8	179.3	6	86.8	6.5	1580	34.3	<LOD*	8.1	68.8	28.9	<LOD*	12.75	1880	49.9	164.8	43.8	<LOD*	82.05	292.6	110	17792	310	1160	200	<LOD*	210
100 ND, changed out battery	11/8/2001 11:46	100	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA	
101	11/8/2001 11:46	101	<LOD*	12.45	122.8	5.5	144.7	6.3	62.9	6.7	938.4	31	<LOD*	7.95	<LOD*	39.45	<LOD*	12.6	1739.2	56.1	150.5	48.5	<LOD*	83.25	<LOD*	150	11659.2	290	1009.6	200	<LOD*	225
102	11/8/2001 11:51	102	<LOD*	7.95	73.7	3.1	100.2	3.6	43.1	3.9	572.8	16.8	<LOD*	4.95	26.2	14.6	<LOD*	7.5	1389.6	34.5	76	29.5	<LOD*	51.6	<LOD*	93.15	8928	170	596.8	120	<LOD*	135
103	11/8/2001 11:59	103** (SS-60)	22.1	7.1	131.7	4.5	147.5	5.1	62.9	5.3	1920	34.9	<LOD*	7.65	99.4	29.3	<LOD*	12.3	2560	53.2	220	44	<LOD*	70.35	234.4	86.7	12800	240	989.6	160	<LOD*	195
104	11/8/2001 12:07	104	<LOD*	9.75	114.9	4.1	127.1	4.6	55.8	4.9	708	21	<LOD*	6	42.4	18.3	<LOD*	9	1260	37.3	95.8	33.3	<LOD*	60.15	129.2	73.9	9567.2	200	667.2			

Table 1 UDEQ/DERR Lower Silver Creek IA
XRF Sample Results for the (Cd) Cadmium Source

Notes	Analysis Date:	XRF #:	Mo (ppm) (SCDM=300)		Zr (ppm) (SCDM=ND)		Sr (ppm) (SCDM=47,000)		Rb (ppm) (SCDM=ND)		Pb (ppm) (SCDM=400)		Se (ppm) (SCDM=390)		As (ppm) (SCDM=23)		Hg (ppm) (SCDM=23)		Zn (ppm) (SCDM=23,000)		Cu (ppm) (SCDM=ND)		Ni (ppm) (SCDM=ND)		Co (ppm) (SCDM=1,600)		Fe (ppm) (SCDM=ND)		Mn (ppm) (SCDM=ND)		Mn (ppm) (SCDM=11,000)		Cr (ppm) (SCDM=390)	
			+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	
125 *near 124, same GPS as 123	11/8/2001 17:14	125	<LOD*	30.75	72.4	11.5	74.9	13.5	<LOD*	18.9	4009.6	150	<LOD*	30.9	299.8	120	<LOD*	49.5	7264	270	370.8	200	<LOD*	390	<LOD*	930	89600	2299.2	2748.8	1100	<LOD*	960		
126	11/8/2001 17:18	126	<LOD*	15.6	100.1	6.2	67.1	6.4	<LOD*	9.15	3507.2	70.6	<LOD*	14.4	273.6	57.5	<LOD*	25.2	10195.2	170	474.8	110	<LOD*	144.75	436	190	32588.8	590	2009.6	360	<LOD*	360		
127	11/8/2001 17:26	127	<LOD*	16.5	86.3	6.1	55.2	6.5	10.4	6.5	3878.4	76.3	<LOD*	14.85	410	62.3	<LOD*	28.35	15897.6	220	722.4	140	<LOD*	142.65	260.8	170	22400	480	1569.6	320	<LOD*	375		
128	11/8/2001 17:43	128	<LOD*	8.4	<LOD*	2.85	36.5	3.2	<LOD*	4.2	899.2	25.3	<LOD*	6.6	<LOD*	32.25	<LOD*	10.5	3347.2	64.6	183.6	48.7	<LOD*	53.85	<LOD*	66	2308.8	110	368.4	94	<LOD*	132.3		
129	11/8/2001 17:51	129	<LOD*	12.45	59.2	4.4	63.5	5	15.5	5.1	2139.2	45.4	<LOD*	10.2	106	37.9	<LOD*	19.35	13888	170	559.2	100	<LOD*	96	<LOD*	119.1	6118.4	210	1300	180	<LOD*	240		
130	11/8/2001 18:00	130	<LOD*	15.9	87.6	5.9	55.1	6	<LOD*	8.7	2748.8	63	<LOD*	13.35	137.4	51.6	<LOD*	23.25	7456	140	355	97.8	<LOD*	126.3	261.4	160	19699.2	450	1369.6	290	<LOD*	330		
131 ND, set up	11/9/2001 9:57	131	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
132	11/9/2001 10:06	132	22.6	8.6	192.9	5.9	201.2	6.4	75.8	6.4	460	20.2	<LOD*	7.05	29.7	17.7	<LOD*	9.15	562.8	31.5	65.6	34	<LOD*	81.6	206	110	17395.2	320	763.6	200	<LOD*	210		
133	11/9/2001 10:31	133** (SS-61)	<LOD*	8.25	<LOD*	4.2	54.6	4.4	17.8	4.3	3817.6	53.4	<LOD*	9.3	<LOD*	62.7	<LOD*	15.6	2209.6	52.2	243.2	43.7	<LOD*	60.3	93.5	61.8	5328	160	505.2	120	<LOD*	150		
134	11/9/2001 10:43	134	<LOD*	14.7	175.9	6.8	207.6	7.8	73.9	7.6	1180	36.6	<LOD*	9	70	31.3	<LOD*	13.65	996	46.5	110.3	45.4	<LOD*	96.6	<LOD*	195	15590.4	360	569.2	220	<LOD*	255		
135	11/9/2001 10:53	135	14.8	8.1	142.7	5.3	166.6	6	74.1	6.4	1260	32.2	<LOD*	8.25	72.1	27.5	<LOD*	12.45	1939.2	53	125.5	44.8	<LOD*	79.5	<LOD*	150	14899.2	300	893.6	190	<LOD*	210		
136	11/9/2001 11:02	136	29.3	9.3	160.8	6.1	208.2	7.1	71.3	6.9	175.8	15.2	<LOD*	6.9	<LOD*	20.4	<LOD*	9.3	272.8	26.8	<LOD*	47.85	<LOD*	84.3	195.7	110	14092.8	320	496	200	<LOD*	225		
137	11/9/2001 11:09	137	31.1	9.5	148.8	6.1	176.2	6.9	71.8	7.1	600.8	25.8	<LOD*	8.25	40.3	22.6	<LOD*	11.4	756	40	62.7	40.4	<LOD*	91.8	265	120	15795.2	350	716.4	220	<LOD*	255		
138	11/9/2001 11:16	138	22.5	8.5	173	5.7	186.4	6.3	68.3	6.2	680.4	24.2	<LOD*	7.2	48.8	21.1	<LOD*	10.2	731.6	34.8	<LOD*	51.9	<LOD*	78.75	175.3	100	14489.6	300	768.8	190	<LOD*	210		
139	11/9/2001 11:27	139	<LOD*	10.05	53.2	3.7	107.1	4.8	23.2	4.4	1360	31.9	<LOD*	7.2	<LOD*	39.75	<LOD*	12.45	4278.4	75.1	131.5	54.3	<LOD*	64.95	<LOD*	102.45	6348.8	180	658.4	140	<LOD*	165		
140	11/9/2001 11:38	140** (SS-62)	<LOD*	14.85	8.8	5.6	183.8	9.5	<LOD*	10.5	6764.8	110	<LOD*	17.25	263	78.2	<LOD*	34.65	27392	320	1160	170	<LOD*	142.8	<LOD*	165	8025.6	280	1480	240	<LOD*	345		
141	11/9/2001 12:05	141	14.6	8	140.4	5.2	226.2	6.7	53.5	5.8	2120	40.2	<LOD*	8.7	89.7	33.3	<LOD*	14.25	3868.8	71.7	238.8	55.6	<LOD*	85.2	180.2	110	16998.4	300	1140	200	<LOD*	225		
142	11/9/2001 12:15	142	<LOD*	14.85	107.1	6.3	91.5	7.1	<LOD*	8.7	5209.6	86.6	<LOD*	14.4	<LOD*	97.95	<LOD*	24	2289.6	72.4	<LOD*	90.75	<LOD*	133.2	<LOD*	285	36198.4	610	756.4	340	<LOD*	315		
143	11/9/2001 12:23	143	<LOD*	7.95	<LOD*	3.6	40.7	4.2	<LOD*	5.55	4489.6	55.9	<LOD*	10.05	316.4	44.7	<LOD*	18.6	10995.2	120	502.4	77	<LOD*	71.1	<LOD*	94.2	6118.4	170	451.2	120	<LOD*	165		
144	11/9/2001 12:33	144	<LOD*	20.25	75.6	8.1	132.6	10.7	<LOD*	13.2	5728	120	<LOD*	20.85	246.4	91.3	<LOD*	40.5	21299.2	340	885.6	190	<LOD*	195	<LOD*	330	24294.4	630	1739.2	410	<LOD*	480		
145	11/9/2001 12:42	145	<LOD*	14.1	35.8	5.3	89.7	7.5	<LOD*	9.6	8249.6	110	<LOD*	16.2	140.4	77.4	<LOD*	29.4	9068.8	140	530	98.8	<LOD*	165	346.8	230	59852.8	780	1429.6	410	<LOD*	405		
146	11/9/2001 12:53	146	<LOD*	13.2	61	5.4	116.1	7.2	18.4	6.3	5379.2	83	<LOD*	14.1	282	64.1	<LOD*	25.95	9145.6	140	594	97.7	<LOD*	115.35	<LOD*	210	18393.6	390	1060	250	<LOD*	285		
147	11/9/2001 13:04	147	<LOD*	20.1	107.8	9.1	95	11.3	20.4	10.3	14195.2	200	<LOD*	25.65	<LOD*	195	<LOD*	49.5	24998.4	350	1600	200	<LOD*	195	<LOD*	300	25395.2	590	2409.6	400	<LOD*	480		
148	11/9/2001 13:13	148	<LOD*	16.05	59.6	5.9	76.8	7.2	23.2	7.3	4099.2	81.1	<LOD*	15.15	215.6	64.4	<LOD*	28.5	13798.4	210	629.6	130	<LOD*	143.25	373.2	170	21491.2	490	2409.6	340	<LOD*	375		
149	11/9/2001 13:21	149	<LOD*	15.3	57.4	5.4	97.8	7	<LOD*	9.45	4588.8	77.5	<LOD*	14.55	242.2	60.8	<LOD*	28.35	21990.4	260	754.8	140	<LOD*	146.85	324.8	170	29081.6	520	1880	330	430	250		
150	11/9/2001 13:33	150	<LOD*	13.2	59.8	5	54.5	5.9	<LOD*	8.4	4499.2	73.6	<LOD*	13.5	203.3	57.8	<LOD*	24.45	11296	160	617.6													

Table 1 UDEQ/DERR Lower Silver Creek IA
XRF Sample Results for the (Cd) Cadmium Source

Notes	Analysis Date:	XRF #:	Mo (ppm) (SCDM=390)	+/-	Zr (ppm) (SCDM=ND)	+/-	Sr (ppm) (SCDM=47,000)	+/-	Rb (ppm) (SCDM=ND)	+/-	Pb (ppm) (SCDM=400)	+/-	Se (ppm) (SCDM=590)	+/-	As (ppm) (SCDM=23)	+/-	Hg (ppm) (SCDM=23)	+/-	Zn (ppm) (SCDM=23,000)	+/-	Cu (ppm) (SCDM=ND)	+/-	Ni (ppm) (SCDM=1,600)	+/-	Co (ppm) (SCDM=ND)	+/-	Fe (ppm) (SCDM=ND)	+/-	Mn (ppm) (SCDM=11,000)	+/-	Cr (ppm) (SCDM=390)	+/-	
184	11/13/2001 12:26	184	22.4	8.1	122.1	5.1	151.6	6	76.3	6.5	1969.6	40.8	<LOD*	8.55	97	34.1	<LOD*	13.8	2129.6	56.1	144.6	47.1	<LOD*	83.85	<LOD*	165	15396.4	300	811.6	200	233.6	150	
185	11/13/2001 12:36	185	30.2	10.2	143.4	6.6	200	8.1	77	8	2859.2	59.1	<LOD*	11.7	128.2	48.1	<LOD*	18.6	2329.6	70.1	267.8	61.7	129.4	76.5	<LOD*	210	20595.2	420	1009.6	270	1420	240	
186	11/13/2001 12:44	186	22.3	8.8	140.5	5.7	174.2	6.6	82.5	7.1	920.8	29.9	<LOD*	8.25	61.7	25.8	<LOD*	12	1349.6	48.5	121.1	44.6	<LOD*	89.7	<LOD*	180	16192	340	784.4	220	<LOD*	240	
187	11/13/2001 12:51	187	35.2	21.4	42.5	12.9	159.7	19.6	85.8	19.6	14195.2	320	<LOD*	41.1	722.4	210	<LOD*	74.4	11097.6	330	1200	230	436	210	<LOD*	510	29081.6	1000	1549.6	670	3609.6	670	
188	11/13/2001 12:58	188	<LOD*	10.95	110.6	4.6	179.3	5.9	67.8	5.9	485.6	19.9	<LOD*	6.6	<LOD*	25.8	<LOD*	9.3	1589.6	46.4	<LOD*	58.8	<LOD*	77.25	<LOD*	150	15193.6	290	812.4	190	<LOD*	195	
189	11/13/2001 13:07	189	<LOD*	17.6	8.6	132.9	5.5	180.5	6.5	77.2	6.9	416	20.8	<LOD*	7.5	39.3	18.4	<LOD*	10.05	1020	42.5	59.7	39.7	<LOD*	84.75	<LOD*	165	15488	330	558	200	<LOD*	225
190	11/13/2001 13:14	190** (SS-67)	16.2	9.9	140.5	6.5	206.2	8.1	80.6	8.1	1549.6	43.4	<LOD*	9.9	120.2	37.1	<LOD*	15.75	1868.8	63.6	137.9	55.3	<LOD*	105.75	<LOD*	210	18393.6	400	686.4	250	<LOD*	270	
191	11/13/2001 14:13	191	19.4	8.4	129.7	5.4	156.3	6.1	27.1	5.1	442	21.1	<LOD*	7.05	39.3	18.7	<LOD*	9.9	841.6	39.1	95.2	38.3	<LOD*	82.05	<LOD*	165	14988.8	320	665.2	200	<LOD*	210	
192 low count, same GPS as 193	11/13/2001 14:40	192	<LOD*	19.35	49.5	7.8	119.5	11	49.3	11	4579.2	120	<LOD*	21.3	<LOD*	136.2	<LOD*	33.75	2028.8	100	509.6	96.5	<LOD*	150	<LOD*	255	11596.8	470	<LOD*	450	<LOD*	360	
193 *near 192, same GPS	11/13/2001 14:43	193	<LOD*	12.6	66.5	5.3	136.7	7.2	64.3	7.5	3929.6	69.8	<LOD*	12	<LOD*	81.6	25.4	13.8	2089.6	66	378.2	59.6	<LOD*	95.7	<LOD*	120	13196.8	330	404.6	210	<LOD*	225	
194	11/13/2001 14:51	194	<LOD*	17.4	52.3	6.5	60	8	14.5	7.9	5897.6	110	<LOD*	18.3	317.6	81.5	<LOD*	35.55	21990.4	310	672	170	<LOD*	165	<LOD*	300	28595.2	610	2259.2	390	<LOD*	450	
195	11/13/2001 15:01	195	<LOD*	13.2	58.9	5.3	98.2	6.8	50.7	7.4	4089.6	71.4	<LOD*	12.75	<LOD*	83.85	<LOD*	26.25	19289.6	230	532.8	130	<LOD*	124.8	<LOD*	210	18188.8	390	1269.6	260	<LOD*	315	
196	11/13/2001 15:09	196	<LOD*	22.6	8.2	121.8	5.1	128.3	5.5	77.4	6.5	680	24.7	<LOD*	7.35	39.7	21.5	<LOD*	11.1	1240	44.7	137.3	41.9	<LOD*	82.65	<LOD*	150	14195.2	300	440.4	190	<LOD*	210
197	11/13/2001 15:19	197	<LOD*	10.5	33.2	3.8	88.5	5.3	15.8	4.7	2939.2	51.3	<LOD*	9.45	<LOD*	61.65	<LOD*	16.65	4358.4	81.9	390.2	63.4	<LOD*	86.85	<LOD*	150	13388.8	290	342.6	180	<LOD*	195	
198 *near 197, same GPS	11/13/2001 15:25	198	25.9	16.9	156	11.1	243.4	14	42.8	11.2	916	54.9	<LOD*	15.6	<LOD*	71.4	<LOD*	23.1	1320	88.7	<LOD*	123.6	<LOD*	180	<LOD*	390	24396.8	770	<LOD*	675	<LOD*	480	
199	11/13/2001 15:28	199	<LOD*	19.5	81.2	8.3	72.8	10.3	<LOD*	14.7	11097.6	170	<LOD*	24.75	440	120	<LOD*	48.6	36480	470	1269.6	230	<LOD*	225	445.6	250	38579.2	760	2280	460	<LOD*	510	
200 ND, changed out battery	11/13/2001 15:40	200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
201	11/13/2001 15:42	201** (SS-68)	<LOD*	16.65	56.4	7	97.3	9.7	17.2	8.7	14195.2	170	<LOD*	22.2	508.4	110	57.6	29.1	26393.6	310	2000	180	<LOD*	165	<LOD*	255	26188.8	510	2828.8	360	<LOD*	420	
202	11/13/2001 15:55	202	<LOD*	17.85	53.7	7.2	110.6	9.9	<LOD*	12.6	10598.4	150	<LOD*	21.75	357.6	100	<LOD*	44.1	33996.8	410	1629.6	210	<LOD*	195	329.6	210	32179.2	630	2019.2	390	<LOD*	435	
203	11/13/2001 16:08	203	<LOD*	16.5	30.6	6.4	37.8	8.5	<LOD*	11.7	11296	150	<LOD*	21.15	535.6	100	<LOD*	41.55	23897.6	300	1889.6	170	<LOD*	165	<LOD*	210	14988.8	400	2489.6	310	<LOD*	390	
204 ND, set up	11/13/2001 17:55	204	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
205 no GPS, no Notes (set up)	11/13/2001 17:55	205	10.5	2.7	<LOD*	0.9	9.9	1	<LOD*	1.5	<LOD*	3.75	<LOD*	2.4	7	2.5	<LOD*	2.7	<LOD*	8.7	<LOD*	13.95	<LOD*	20.85	<LOD*	24.9	1349.6	44.5	<LOD*	50.25	<LOD*	54.6	
206 ND, set up	11/14/2001 10:49	206	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
207 low count, near 206 same GPS	11/14/2001 10:57	207	<LOD*	44.1	102.9	19.8	133.1	23.8	90.5	28.4	2748.8	190	<LOD*	34.8	<LOD*	240	<LOD*	69.3	8268.8	460	615.2	320	<LOD*	375	<LOD*	720	20390.4	1400	<LOD*	1350	<LOD*	1035	
208	11/14/2001 10:57	208	<LOD*	13.95	116.5	6	161.7	7.3	68.9	7.6	2659.2	55.2	<LOD*	11.4	<LOD*	66.3	<LOD*	19.95	7654.4	130	462	89	<LOD*	110.7	<LOD*	210	19993.6	400	1329.6	260	<LOD*	300	
209	11/14/2001 11:04	209	14.6	5.6	65	3.1	107.6	3.8	41.2	4	562.4	17.2	<LOD*	5.25	35.2	15	<LOD*	7.5	1129.6	32.4	91.8	29.4	<LOD*	54.6	<LOD*	99.45	9478.4	190	592.4	130	<LOD*	144.75	
210	11/14/2001 11:15	210	<LOD*	8.55	<LOD*	3	27.9	3.1	9.2	3.4	1060	27.4	<LOD*	6.9	150.5	24.4	11.5	7.6	2228.8	52.7	193.7	43.2	<LOD*	63.3	<LOD*	111	8339.2	200	350.4	140	<LOD*	150	
211	11/14/2001 11:25	211** (SS-69)	21.9	9.1	132.1	5.8	179.6	7	84.6	7.5	798.8	29.3	<LOD*	8.4	<LOD*	37.35	<LOD*	12.3	1069.6	46	94.8	43.6	<LOD*	92.4	<LOD*	180	16499.2	360	1200	240	<LOD*	240	
212	11/14/2001 11:37	212	<LOD*	8.1	<LOD*	3.45	59.7	3.7	<LOD*	4.8	1529.6	31.5	<LOD*	6.9	<LOD*	39.45	12.5	7.5	2068.8	48.7	234	40.9	<LOD*	54.15	<LOD*	70.65	3169.6	120	327.2	95.8	<LOD*	135.75	
213	11/14/2001 11:44	213	<LOD*	19.65	12.5	8.1	85.5	12.1	<LOD*	16.05	16896	230	<LOD*	28.05	451.6	140	80.9	38.1	34176	450	2680	240	<LOD*	210	<LOD*	300	22297.6	560	2600	410	<LOD*	510	
214	11/14/2001 11:51	214	14.7	7.1	14.9	3.3	89.7	5.1	<LOD*	6.3	2169.6	43.9	<LOD*	9.45	284	37.9	<LOD*	16.05	4569.6	84.6	383	64.6	<LOD*	91.5	<LOD*	180	19392	350	633.2	220	<LOD*	210	
215	11/14/2001 11:59	215	<LOD*	16.05	48.9	5.6	45.1	6.8	<LOD*	9.45	5520	94.4	<LOD*	15.75	341.6	73	35.8	20.4	11699.2	190	1779.2	130	<LOD*	137.1	<LOD*	165	8908.8	300	1040	230	436.4	220	
216	11/14/2001 12:07	216	12.4	7.8	77.6	4.7	140.1	6.2	67.7	6.6	3360	55.2	<LOD*	10.35	222.8	45.1	45.8	12.5	3000	68.4	686	62	<LOD*	91.95	<LOD*	150	14592	300	820.8	200	<LOD*	210	
217	11/14/2001 12:14	217** (SS-70)	<LOD*	14.85	26.5	5.5	42	7.3	<LOD*	10.05	9120	120	<LOD*	18	730.8	86.4	38.5	24.5	27392	300	1788.8	170	<LOD*	143.85	<LOD*	195	15398.4	370	1620	270	<LOD*	345	
218	11/14/2001 12:26	218	12.8	4.6	79.3	2.6	131.3	3.3	46.1	3.3	134.9	7.8	<LOD*	3.75	22	7.1	<LOD*	4.8	290	15.3	27.5	17.6	<LOD*	40.8	127	50.5	8128	140	498	93.9	<LOD*	108.9	
219	11/14/2001 12:39	219	35.5	8.2	149.2	5.2	211.2	6.2	68.9	5.9	115.3	11.7	<LOD*	6.3	19.4	10.7	<LOD*	7.65	194.2	21.6	<LOD*	42	<LOD*	76.5	<LOD*	150	14988.8	290	1000	190	545.6	160	
220	11/14/2001 12:46	220	31.5	13.4	115	8	162.5	9.5	71.4	10.2	23.1	14.5	<LOD*	10.5	<LOD*	20.85	<LOD*	12.3	181.7	36.5	<LOD*	73.05	<LOD*	126.3	255.8	160	12800	460	718.4	300	<LOD*	330	
221 *near 220, same GPS	11/14/2001 12:50	221	26.8	16.5	112.5	10	172.6	12.3	76.5	13.1	38.6	19.4	<LOD*	13.35	<LOD*	26.85	<LOD*	15	188.7	45.8	<LOD*	89.1	<LOD*	150	<LOD*	300	13299.2	580	610	370	<LOD*	405	
222	11/14/2001 13:07	222	7.1	4.4	15.5	2	73.6	3	16.6	2.8	912.8	19.2	<LOD*	4.95	<LOD*	24.3	<LOD*	7.2	910.4	26.2	105.8	24.6	<LOD*	42.15	<LOD*	65.55</							

Table 1 UDEQ/DERR Lower Silver Creek IA
XRF Sample Results for the (Cd) Cadmium Source

Notes	Analysis Date:	XRF #:	Mo (ppm) (SCDM=390)	+/-	Zr (ppm) (SCDM=ND)	+/-	Sr (ppm) (SCDM=47,000)	+/-	Rb (ppm) (SCDM=ND)	+/-	Pb (ppm) (SCDM=400)	+/-	Se (ppm) (SCDM=390)	+/-	As (ppm) (SCDM=23)	+/-	Hg (ppm) (SCDM=23)	+/-	Zn (ppm) (SCDM=23,000)	+/-	Cu (ppm) (SCDM=ND)	+/-	Ni (ppm) (SCDM=1,600)	+/-	Co (ppm) (SCDM=ND)	+/-	Fe (ppm) (SCDM=ND)	+/-	Mn (ppm) (SCDM=11,000)	+/-	Cr (ppm) (SCDM=390)	+/-
244	11/14/2001 16:35	244** (SS-72)	<LOD*	15.6	<LOD*	10.35	105.8	11.2	22.2	9.9	22195.2	230	<LOD*	26.4	567.6	140	132.4	34	23795.2	280	2579.2	170	<LOD*	165	<LOD*	240	20492.8	440	2409.6	330	<LOD*	405
245	11/14/2001 16:48	245	<LOD*	7.65	<LOD*	3.45	53.8	3.7	<LOD*	4.8	2649.6	39	<LOD*	7.35	89.1	31.9	<LOD*	13.35	5379.2	73.7	347.4	53.6	<LOD*	56.85	<LOD*	79.2	4787.2	140	1129.6	120	<LOD*	165
246	11/14/2001 16:57	246	<LOD*	18.75	<LOD*	10.35	56	10.8	<LOD*	15	11398.4	190	<LOD*	25.95	419.6	130	<LOD*	50.7	22592	350	1529.6	210	<LOD*	195	<LOD*	285	16588.8	510	2979.2	400	<LOD*	480
247	11/14/2001 17:04	247	<LOD*	10.2	25	3.6	82.3	5.2	50.6	5.8	3827.2	56.7	<LOD*	10.05	107.4	44.9	<LOD*	18.6	7545.6	110	646.4	76.3	<LOD*	94.8	<LOD*	180	21696	360	2680	250	<LOD*	270
248 ND, set up	11/15/2001 10:25	248	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
249	11/15/2001 10:29	249	<LOD*	15	36.3	6.4	103.1	9.3	23.9	8.4	12000	150	<LOD*	20.7	361.8	100	58.6	26.6	18892.8	250	1580	150	<LOD*	148.35	<LOD*	225	17395.2	410	2169.6	300	<LOD*	360
250	11/15/2001 10:37	250	<LOD*	11.25	94.4	4.5	137.8	5.5	82.8	6.5	615.6	23	<LOD*	7.05	32.5	20.1	<LOD*	10.65	1409.6	45.9	86.6	40.2	<LOD*	72.15	<LOD*	127.8	9414.4	240	317.2	150	<LOD*	180
251	11/15/2001 10:44	251	<LOD*	12.15	39.5	4.5	93.7	6.2	30.4	6.1	4537.6	70	<LOD*	12.15	147.5	54.7	<LOD*	22.8	10899.2	150	596	97.1	<LOD*	104.1	<LOD*	180	15296	330	3318.4	270	<LOD*	315
252	11/15/2001 10:51	252	<LOD*	8.55	4.6	2.6	57	3.9	18.7	4	1620	33.5	<LOD*	7.2	51.4	26.1	<LOD*	12.9	5459.2	82.5	200.9	58.3	<LOD*	72.3	134.8	86.5	11795.2	240	681.6	160	<LOD*	180
253	11/15/2001 10:59	253	<LOD*	12	37	4.4	82.9	6.1	9.9	5.3	4867.2	73.4	<LOD*	12.9	132.2	56.6	<LOD*	21.3	2840	70.7	203	58.3	<LOD*	116.7	307.4	170	36198.4	530	562	300	<LOD*	270
254	11/15/2001 11:05	254	14.2	7.9	94.7	4.8	174.5	6.4	33.5	5.4	1140	32.2	<LOD*	8.25	54.3	27.4	<LOD*	12	950.4	40.4	93.4	39.1	<LOD*	92.25	<LOD*	195	24089.6	400	<LOD*	345	<LOD*	225
255	11/15/2001 11:13	255	<LOD*	13.95	70.3	6.1	141.9	8.5	32.7	7.6	9068.8	120	<LOD*	16.8	202.4	81.9	<LOD*	31.8	14297.6	190	1029.6	120	<LOD*	124.2	<LOD*	180	14489.6	340	1300	250	<LOD*	300
256	11/15/2001 11:21	256** (SS-73)	<LOD*	17.55	48.8	7.3	110.8	10.4	20.5	9.2	12595.2	170	<LOD*	22.95	417.2	110	<LOD*	44.25	22092.8	300	1360	170	<LOD*	165	<LOD*	255	21094.4	500	2899.2	360	<LOD*	435
257	11/15/2001 11:33	257	<LOD*	19.2	27.7	7.6	74	10.7	<LOD*	14.55	12998.4	190	<LOD*	25.65	678	130	<LOD*	50.25	29388.8	390	1800	210	<LOD*	195	<LOD*	300	22592	550	2489.6	390	<LOD*	495
258	11/15/2001 11:42	258	16.8	7.4	80.3	4.3	178.6	6	38.9	5.1	275.6	16.1	<LOD*	6.3	<LOD*	21	<LOD*	8.25	486.8	29.3	<LOD*	47.1	<LOD*	68.55	146.1	83.1	8838.4	230	620	160	<LOD*	180
259	11/15/2001 11:51	259	<LOD*	16.8	88.2	6.5	67.7	7.3	37.9	8.2	5379.2	92.4	<LOD*	16.8	296	71.4	<LOD*	33.3	26982.4	320	1269.6	170	<LOD*	165	<LOD*	300	33894.4	610	1659.2	370	<LOD*	495
260	11/15/2001 12:00	260	20.3	11.2	150.8	7.7	106	9	16.2	7.9	12896	150	<LOD*	20.4	<LOD*	149.7	<LOD*	36	8409.6	140	370.6	99	<LOD*	180	406.6	270	75468.8	949.6	1180	470	<LOD*	420
261 * near 262, same GPS	11/15/2001 12:10	261	<LOD*	22.8	79.5	8.1	38.1	8.2	<LOD*	12.6	3379.2	96	<LOD*	19.95	239	78	<LOD*	38.4	19289.6	350	577.6	200	<LOD*	225	<LOD*	480	46899.2	1000	2619.2	580	<LOD*	600
262	11/15/2001 12:14	262	<LOD*	20.85	94.5	9	50.3	10.6	<LOD*	14.4	11398.4	190	<LOD*	26.4	601.2	130	<LOD*	49.05	17190.4	220	1129.6	180	<LOD*	240	<LOD*	480	58880	1100	2659.2	580	<LOD*	555
263 * near 262, same GPS	11/15/2001 12:19	263	<LOD*	23.4	94.3	8.9	44.9	9.1	<LOD*	13.95	4448	120	<LOD*	23.1	417.2	93.9	<LOD*	38.4	8787.2	220	338.8	150	<LOD*	285	<LOD*	690	93081.6	1699.2	2028.8	790	<LOD*	675
264	11/15/2001 12:26	264	<LOD*	14.7	47.4	5.4	61.4	6.8	17.6	7	5849.6	90.3	<LOD*	16.05	505.2	70	<LOD*	31.95	24793.6	280	1069.6	150	<LOD*	150	<LOD*	285	33484.8	560	2400	350	<LOD*	390
265	11/15/2001 12:35	265	<LOD*	12.75	57.2	5.1	141.3	7.2	24.4	6.3	5219.2	77.6	<LOD*	13.2	97.8	59.3	<LOD*	24.15	10297.6	150	568.4	97	<LOD*	114.45	<LOD*	210	22592	420	6758.4	360	<LOD*	405
266	11/15/2001 12:44	266	<LOD*	12.3	111.5	5.1	149.1	6	74.3	6.7	624.8	24.6	<LOD*	7.8	<LOD*	31.95	<LOD*	12.75	4908.8	90.2	134	64.8	<LOD*	89.55	<LOD*	165	14796.8	310	761.6	200	<LOD*	225
267	11/15/2001 13:01	267	<LOD*	17.7	92.5	6.9	74.5	7.7	<LOD*	10.95	4419.2	88.6	<LOD*	17.4	299.6	70.3	<LOD*	33.15	22988.8	310	880	170	<LOD*	180	375.8	230	39193.6	720	2249.6	430	<LOD*	450
268	11/15/2001 13:09	268	<LOD*	14.55	122	6.6	260.8	9.2	37	7.3	4707.2	76.6	<LOD*	13.5	254	60.1	<LOD*	25.35	11897.6	170	700	110	<LOD*	133.35	370	170	30976	520	1509.6	320	<LOD*	345
269	11/15/2001 13:55	269	64.6	12.4	231.2	8.3	78.8	6.9	<LOD*	8.85	4457.6	81	<LOD*	15	176.6	63.4	<LOD*	23.7	634	44.6	91	48.7	<LOD*	129.75	<LOD*	285	33792	600	611.6	330	<LOD*	315
270	11/15/2001 14:02	270	<LOD*	18.6	59.3	7.2	158.8	10.4	<LOD*	12.9	5939.2	110	<LOD*	21.9	1369.6	93.1	<LOD*	40.8	20198.4	300	956.8	180	<LOD*	195	<LOD*	390	43187.2	810	2508.8	480	<LOD*	495
271	11/15/2001 14:12	271** (SS-74)	<LOD*	19.2	109.8	8.1	67.3	9.1	<LOD*	12.75	8697.6	140	<LOD*	21.75	520	99.4	<LOD*	42.45	27084.8	360	1809.6	200	<LOD*	195	365	240	39475.2	740	2640	450	<LOD*	495
272	11/15/2001 14:22	272	<LOD*	9.45	<LOD*	4.35	71.3	4.5	18.4	4.6	1659.2	36.5	<LOD*	8.4	70.6	30.8	<LOD*	16.2	11494.4	140	465.2	87.6	<LOD*	90.3	<LOD*	165	17996.8	350	18291.2	450	<LOD*	510
273	11/15/2001 14:29	273	16.1	10	140.7	6.4	180.9	7.6	51.3	7.1	1640	44.5	<LOD*	10.2	<LOD*	54.3	<LOD*	15.9	2179.2	68	111.1	57.9	<LOD*	132.75	468.8	210	42496	650	874.4	350	<LOD*	330
274	11/15/2001 14:35	274	<LOD*	17.7	38.7	6.8	49.4	8.7	<LOD*	13.05	8697.6	140	<LOD*	20.7	346.8	96.7	<LOD*	43.8	40499.2	480	2209.6	230	<LOD*	195	325	190	22195.2	520	2708.8	370	<LOD*	465
275	11/15/2001 14:43	275	<LOD*	19.5	147.8	9.4	126.5	11.7	16.7	9.9	16089.6	210	<LOD*	25.5	<LOD*	195	96	31	3478.4	110	254.2	88.5	<LOD*	195	834.4	320	70451.2	1100	2129.6	550	<LOD*	480
276	11/15/2001 14:52	276	<LOD*	12.15	60.7	4.5	96.7	5.6	14.9	5	1868.8	44	<LOD*	9.75	118.3	37.1	<LOD*	16.5	4489.6	90.5	278	67.9	<LOD*	92.85	<LOD*	180	15091.2	330	879.2	220	<LOD*	240
277	11/15/2001 15:01	277	<LOD*	15.15	71.8	6.5	102.5	8.6	47.3	8.6	9504	130	<LOD*	18.3	224.8	89.7	52	23.2	12000	180	1260	120	<LOD*	134.4	<LOD*	210	17600	410	2009.6	290	<LOD*	345
278	11/15/2001 15:09	278	<LOD*	12.45	101.6	5.2	209	7.1	49.4	6.1	673.2	25.8	<LOD*	7.8	34.8	22.4	<LOD*	11.4	1489.6	50.8	112.1	44.8	<LOD*	82.65	<LOD*	165	13299.2	300	1100	210	<LOD*	225
279	11/15/2001 15:17	279** (SS-75)	<LOD*	15.45	65.8	6	55.3	7.2	16.3	7.2	7116.8	100	<LOD*	16.95	364.8	77	<LOD*	33.6	24294.4	280	1329.6	160	<LOD*	165	407.8	200	35379.2	590	2708.8	370	<LOD*	405
280 ND, set up	11/19/2001 10:43	280	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
281	11/19/2001 10:46	281	<LOD*	15.9	90.5	6.6	122.1	8.4	20.6	7.4	7468.8	110	<LOD*	17.1	329.6	79.8	<LOD*	31.95	14092.8	200	609.2	120	<LOD*	141.45	<LOD*	255	26496	510	1699.2	320	<LOD*	360
282	11/19/2001 11:03	282	<LOD*	13.05	52.4	5.1	145.8	7.3	18.5	6.1	3648	66.2	<LOD*	12.45	211.8	53.4	<LOD*	22.8	10899.2													

Table 2 UDEQ/DERR Lower Silver Creek IA
XRF Soil Sample Results for the (Am) Americium Source

Notes	Analysis Date:	XRF File #:	Am 241 Source		La (ppm) (SCDM=ND)		Ba (ppm) (SCDM=5,500)		Cs (ppm) (SCDM=ND)		Te (ppm) (SCDM=ND)		Sb (ppm) (SCDM=31)		Sn (ppm) (SCDM=ND)		Cd (ppm) (SCDM=39)		Ag (ppm) (SCDM=390)		Pd (ppm) (SCDM=ND)	
				+/-		+/-		+/-		+/-		+/-		+/-		+/-		+/-		+/-		+/-
290Am source of 289	11/19/2001 13:56	290		<LOD*	12.15		217.4	21.7	<LOD*	23.25	<LOD*	30.75	65	17.4	<LOD*	56.1	30.2	12.3	<LOD*	75.15	<LOD*	13.95
291 ND, set up	11/19/2001 16:28	291		NA			NA		NA		NA		NA		NA		NA		NA		NA	
292 - SD-77	11/19/2001 16:28	292		NA			NA		NA		NA		NA		NA		NA		NA		NA	
293Am source SD-77	11/19/2001 16:33	293		21.3	12.7		263.8	31.9	<LOD*	31.2	<LOD*	39.6	<LOD*	26.25	<LOD*	74.55	<LOD*	20.4	<LOD*	100.05	<LOD*	16.95

Explanation of Notes:
low count = a low XRF analysis time (<60)
Note: some sites had 1 GPS, and more than one XRF file(s) within the same proximity, in which case the XRF file with the higher Lead (Pb) value was used in the contour-contaminate mapping.

Explanation of Color Coding:		
NA		Parameter not analyzed
<LOD*	39	Result less than limit of detection
<LOD*	41	Result less than limit of detection, limit of detection greater than SCDM benchmark
45.2	21.3	Maximum result (result (ppm) + error (+/-)) below SCDM benchmark
381	53	Result, including error, may be above or below SCDM benchmark
1241	52	Minimum result (result (ppm) - error (+/-)) greater than SCDM benchmark

Table 2 XRF Americium Results

Table 3 UDEQ/DERR Lower Silver Creek IA
Summary of the Surface Water Laboratory Analysis Results

Laboratory ID	Collection Date	27 Surface Water Samples (collected concurrently with sediment or soil sample)	Ground- water**	Freshwater**																						
				Pb (Lead) (MCL=15)	Se (Selenium) (MCL=25)	As (Arsenic) (MCL=50)	Hg (Mercury) (MCL=2)	Zn (Zinc) (MCL=ND)	Cu (Copper) (MCL=1300)	Ni (Nickel) (MCL=ND)	Co (Cobalt) (MCL=ND)	Fe (Iron)** (MCL=ND)	Mn (Manganese) (MCL=ND)	Cr (Chromium) (MCL=100)	Ba*** (MCL=2000)	Sb (Antimony) (MCL=20)	Cd (Cadmium) (MCL=5)	Ag (Silver) (MCL=ND)	Al (Aluminum) (MCL=ND)	Be (Beryllium) (MCL=20)	Ca*** (Calcium) (MCL=ND)	Mg*** (Magnesium) (MCL=ND)	K*** (Potassium) (MCL=ND)	Na*** (Sodium) (MCL=ND)	Ti (Titanium) (MCL=ND)	V (Vanadium) (MCL=ND)
200109282	11/2/01 16:30	LSC-SW - 01 (SD-31)		18.3	<1	<5	<0.2	806	<12	<10	<30	187	113	<5	40.2	7.2	1.8	<2	<30	<1	126000	33000	3380	49800	<1	<3
200109294	11/2/01 16:15	LSC-SW - 02 (SD-32)		32.8	<1	<5	<0.2	867	<12	<10	<30	213	184	<5	42.9	7.7	1.9	<2	31.4	<1	143000	36500	3700	54500	<1	<3
200109313	11/2/01 16:05	LSC-SW - 03 (SD-33)		33	<1	<5	<0.2	789	<12	<10	<30	187	169	<5	40.7	7.7	1.9	<2	33.4	<1	138000	35100	3620	51500	<1	<3
200109921	11/9/01 9:05	LSC-SW - 06* (SS-61)		<3	<1	<5	<0.2	<30	<12	<10	<30	<0.02	<5	<5	70.9	<3	<1	<2	<30	<1	20400	5850	NR	NR	<1	3.4
200109286	11/2/01 15:35	LSC-SW - 07 (SD-37)		16.2	<1	14.6	<0.2	1530	<12	<10	<30	50.3	119	<5	31.1	37	6.2	<2	<30	<1	198000	49900	5200	62200	<1	<3
200109323	11/2/01 15:10	LSC-SW - 08 (SD-38)		10	<1	11.7	<0.2	1980	<12	<10	<30	35.8	160	<5	29.3	35.2	7	<2	<30	<1	207000	51600	5440	64100	<1	<3
200109307	11/2/01 14:30	LSC-SW - 09 (SD-39)		7.3	<1	10.3	<0.2	2110	<12	<10	<30	33	118	<5	31.3	35.6	6	<2	<30	<1	213000	52900	5840	65900	<1	<3
200109317	11/2/01 14:05	LSC-SW - 10 (SD-40)		260	<1	23.4	<0.2	1270	26.4	<10	<30	526	145	6.8	34.3	21.7	4.7	<2	94.3	<1	162000	40400	10600	129000	<1	<3
200109331	11/2/01 12:45	LSC-SW - 11 (SD-41)		128	<1	20	<0.2	908	<12	<10	<30	304	153	<5	47.7	22.8	2.2	<2	36.4	<1	150000	38000	9670	106000	<1	<3
200109319	11/2/01 12:35	LSC-SW - 12 (SD-42)		122	<1	19.4	<0.2	1010	<12	<10	<30	336	184	<5	52.5	24.6	2.3	<2	45.8	<1	155000	38700	9060	100000	<1	<3
200109306	11/2/01 12:25	LSC-SW - 13 (SD-43)		94.9	<1	<5	<0.2	1065	<12	<10	<30	317	196	<5	59.5	25.3	2.1	<2	41.9	<1	158000	39600	8580	94100	<1	<3
200109327	11/2/01 12:15	LSC-SW - 14 (SD-44)		69.5	<1	16.7	<0.2	900	<12	<10	<30	263	170	<5	58.7	24	2	<2	40.6	<1	156000	39000	8350	90700	<1	<3
200109311	11/2/01 12:05	LSC-SW - 15 (SD-45)		46.8	<1	16.4	<0.2	787	<12	10	<30	183	153	18.8	62.9	23.2	1.9	<2	33.7	<1	153000	38300	8270	92100	<1	<3
200109284	11/2/01 11:55	LSC-SW - 16 (SD-46)		33.5	<1	16.2	<0.2	762	<12	<10	<30	153	148	<5	66.8	22.3	1.7	<2	<30	<1	147000	37300	8080	93600	<1	<3
200109296	11/2/01 11:45	LSC-SW - 17 (SD-47)		116	<1	18.1	<0.2	1020	<12	<10	<30	651	278	<5	83.6	20.6	3.4	<2	346	<1	155000	38700	8510	101000	<1	<3
200109321	11/2/01 11:30	LSC-SW - 18 (SD-48)		35.5	<1	15.7	<0.2	639	<12	<10	<30	180	161	<5	69.4	20.9	1.7	<2	59.1	<1	152000	37900	8550	103000	<1	<3
200109289	11/2/01 11:10	LSC-SW - 19 (SD-49)		28.3	<1	15.9	<0.2	686	<12	<10	<30	151	165	<5	71.3	20.1	1.5	<2	63.5	<1	148000	38000	8740	107000	<1	<3
200109303	11/2/01 10:55	LSC-SW - 20 (SD-50)		25.5	<1	16.6	<0.2	642	<12	<10	<30	160	168	<5	71	20.1	1.4	<2	76	<1	148000	18500	4340	57100	<1	<3
200109315	11/2/01 10:30	LSC-SW - 21 (SD-51)		24.4	<1	15.7	<0.2	571	<12	<10	<30	161	198	<5	73	19.5	1.2	<2	78.2	<1	156000	39000	8970	114000	<1	<3
200109298	11/2/01 10:15	LSC-SW - 22 (SD-52)		30.4	<1	12.1	<0.2	484	<12	<10	<30	216	171	<5	100	14.6	1.5	<2	127	<1	136000	30500	6850	88500	<1	<3
200109329	11/2/01 10:05	LSC-SW - 23 (SD-53)		20	<1	11.8	<0.2	375	<12	<10	<30	138	124	<5	98.9	15.2	1	<2	74.5	<1	136000	30500	6900	87400	<1	<3
200109309	11/2/01 9:50	LSC-SW - 24 (SD-54)		20.8	<1	11.7	<0.2	378	<12	<10	<30	116	109	<5	100	14.5	1.2	<2	71.9	<1	134000	29800	6650	87400	<1	<3
200109301	11/2/01 9:30	LSC-SW - 25 (SD-55)		23	<1	11.9	<0.2	377	<12	<10	<30	128	111	<5	100	14.9	1.1	<2	77.8	<1	138000	31000	6890	90700	<1	<3
200109290	11/2/01 11:20	LSC-SW - 27 (SW-19)		27.2	<1	15.5	<0.2	678	<12	<10	<30	146	162	<5	71.6	20	1.5	<2	59.3	<1	146000	37000	8470	106000	<1	<3
200109291	11/2/01 9:00	LSC-SW - 28 (SD-76)		15.1	<1	12	<0.2	363	<12	<10	<30	96.7	102	<5	100	14.7	<1	<2	48.2	<1	141000	32300	7060	94400	<1	<3
200109300	11/2/01 10:45	LSC-SW - 29 (SD-77)		<3	<1	<5	<0.2	<30	<12	<10	<30	22.1	9.8	<5	200	<3	<1	<2	<30	<1	72300	5190	<1	7880	<1	<3
200109325	11/2/01 13:50	LSC-SW - 30 (SD-79)		25.6	<1	14.2	<0.2	122	<12	<10	<30	54.2	22	<5	24.9	5.5	<1	<2	<30	<1	117000	30100	13000	160000	<1	<3

Explanation of Color Coding	
NR	Parameter not analyzed
<345	Analyte not detected above limit of detection
<29	Analyte not detected above limit of detection (LOD) - Limit of detection is above the SCDM drinking water MCL or environmental freshwater AWQC/AALAC benchmarks.
125	Analyte detected, result below SCDM drinking water MCL or environmental freshwater AWQC/AALAC benchmarks.
1741	Result above SCDM drinking water MCL or environmental freshwater AWQC/AALAC benchmarks
*	received from the laboratory in ppm units, values are correct as ppb units.
**	** The lower value of either the SCDM drinking water benchmark or the SCDM environmental freshwater AWQC/AALAC benchmark was used in color coding the results.
***	Laboratory Analysis Data was provided in ppm and converted to ppb for this table.

Concentration units are parts per billion (ppb).

Table 3 Surface Water Results

Table 4. UDEQ/DERR Lower Silver Creek IA
Summary of the Sediment Laboratory Analysis Results

Laboratory ID	Collection Date	24 Sediment Samples (collected concurrently with a surface water sample)	Pb (Lead)	Se (Selenium)	As (Arsenic)	Hg (Mercury)	Zn (Zinc)	Cu (Copper)	Ni (Nickel)	Co (Cobalt)	Fe (Iron)	Mn (Manganese)	Cr (Chromium)	Ba (Barium)	Sb (Antimony)	Cd (Cadmium)	Ag (Silver)	Al (Aluminum)	Be (Beryllium)	Ca (Calcium)	Mg (Magnesium)	K (Potassium)	Na (Sodium)	Tl (Thallium)	V (Vanadium)
200109283	11/2/01 16:15	LSC-SD - 31 (SW-01)	7650	<41	328	4.55	22200	463	<41	24.2	86000	2000	51.4	83.6	111	122	34.6	7940	<0.513	36400	11800	889	270	<20.5	22.9
200109295	11/2/01 16:05	LSC-SD - 32 (SW-02)	3740	<25.2	164	9.45	8130	249	<25.2	14.5	38300	3760	15.3	184	56.9	36.4	20.4	10200	<0.315	12500	6220	39.4	454	<12.6	25.7
200109314	11/2/01 15:35	LSC-SD - 33 (SW-03)	3530	<25.4	168	6.67	10900	271	<25.4	15.4	40600	1860	18.9	170	46.5	47.5	19	12700	<0.317	21400	8150	1560	335	<12.7	34.5
200109287	11/2/01 15:10	LSC-SD - 37 (SW-07)	4450	<21	270	7.1	15500	224	<21	12.2	30100	5460	11.9	59.3	65.4	69.3	16.9	7300	<0.263	22100	7730	789	170	<10.5	13.2
200109324	11/2/01 14:30	LSC-SD - 38 (SW-08)	6120	<22.4	222	11.8	20600	348	<22.4	5.24	26500	1200	12.7	49.8	119	97.5	30.9	4450	<0.28	24200	8890	500	148	<11.2	11.1
200109308	11/2/01 14:05	LSC-SD - 39 (SW-09)	13700	<28.9	467	11.1	27300	677	<28.9	15.3	30100	5220	22.8	59.3	192	110	34.8	11500	<0.362	41300	24200	708	179	<14.5	22.2
200109318	11/2/01 12:45	LSC-SD - 40 (SW-10)	10800	<30.6	555	33.49	30300	806	<30.6	8.56	33500	2430	16.4	92.3	338	145	64.7	5790	<0.382	32100	11900	635	568	<15.3	16.2
200109292	11/2/01 12:35	LSC-SD - 41 (SW-11)	5640	<18.9	252	4.52	20500	297	<18.9	5.11	21400	1330	11.8	147	127	85.6	33.6	8730	<0.236	42400	10500	483	238	<9.43	14
200109320	11/2/01 12:25	LSC-SD - 42 (SW-12)	3140	<17.5	129	4.97	6380	174	<17.5	<1.75	8210	1240	11.8	39.9	66.2	24	24.6	2240	<2.19	31500	7490	454	107	<8.74	7.16
200109305	11/2/01 12:15	LSC-SD - 43 (SW-13)	3580	<38.5	142	2.31	9650	234	<38.5	5.43	8590	1650	11.3	141	58.1	41.3	16.5	6090	<0.482	19700	6040	1100	430	<19.3	16.1
200109328	11/2/01 12:05	LSC-SD - 44 (SW-14)	3600	<41.7	137	9.4	14300	248	<41.7	9.04	25900	1490	21.2	233	51	63.3	18.4	13500	<0.521	25100	6840	2130	567	<20.8	29.1
200109312	11/2/01 11:55	LSC-SD - 45 (SW-15)	3450	<17.3	215	2.1	18700	192	<17.3	6.74	21800	1760	12.4	97.8	93.6	56.7	22.1	4200	<0.216	24800	6480	669	210	<8.64	14.7
200109285	11/2/01 11:45	LSC-SD - 46 (SW-16)	664	<24.2	24.6	2.72	2160	51.7	<24.2	3.83	11200	264	14.1	136	<12.1	11.4	3.86	7060	<0.302	8820	2770	1070	224	<12.1	24
200109297	11/2/01 11:30	LSC-SD - 47 (SW-17)	1140	<17	54.4	0.81	4000	66.7	<17	4.59	7790	1280	10.4	109	20.1	14.7	5.07	5260	<0.212	16600	5340	848	168	<8.48	17
200109322	11/2/01 11:10	LSC-SD - 48 (SW-18)	1080	<24.3	43.6	1.22	5300	78.8	<24.3	5.01	13200	654	15	148	12.7	21.3	4.72	7930	<0.304	13600	3360	1270	271	<12.2	21.2
200109288	11/2/01 10:55	LSC-SD - 49 (SW-19)	739	<29.6	<29.6	1.33	3560	75.6	<29.6	5.58	13900	555	15.5	195	<14.8	18.5	3.32	12900	<0.37	16600	4720	2110	387	<14.8	22.5
200109304	11/2/01 10:30	LSC-SD - 50 (SW-20)	486	<22.6	28	1.6	2460	49.7	<22.6	3.68	14600	225	9.25	70.8	<11.3	10.9	1.96	5760	<0.282	6610	2250	960	269	<11.3	16.1
200109316	11/2/01 10:15	LSC-SD - 51 (SW-21)	1350	<42.9	51.5	3.85	6970	125	<42.9	9.07	21700	936	21.7	353	<21.4	32.9	6.76	18900	<0.536	22400	6180	2970	357	<21.4	30.8
200109299	11/2/01 10:05	LSC-SD - 52 (SW-22)	1000	<16.3	51.1	0.88	3390	47.6	<16.3	3.37	23900	972	10.8	78.1	27.4	13.4	5.24	3150	<0.203	14900	4390	545	175	<8.13	17.4
200109330	11/2/01 9:50	LSC-SD - 53 (SW-23)	1140	<33.8	34.4	34.2	3520	97.5	<33.8	7.44	16100	1360	17	222	<16.9	25.6	4.9	13900	<0.422	15000	4630	2360	459	<16.9	28.4
200109310	11/2/01 9:30	LSC-SD - 54 (SW-24)	991	<21.5	36.4	4.03	3220	73.4	<21.5	3.95	8040	414	11.4	117	15.5	14.2	5.3	6410	<0.268	11100	2520	792	167	<10.7	18.5
200109302	11/2/01 9:00	LSC-SD - 55 (SW-25)	1780	<41.3	<41.3	6.19	4490	146	<41.3	7.44	15300	473	18.1	213	21.5	64.4	7.36	15700	<0.516	21100	4850	2830	462	<20.6	27.5
200109293	11/2/01 13:50	LSC-SD - 76 (SW-28)	752	<16.6	38.8	0.57	1430	49.7	<16.6	2.97	7650	558	8.02	51.8	17.3	7.26	2.92	2790	<0.207	10400	2850	376	165	<8.28	14.8
200109326	11/6/01 10:35	LSC-SD - 79 (SW-30)	3280	<17.8	153	1.98	8630	243	<17.8	<1.78	8340	1620	13.1	22.5	77.6	34.2	24.9	1880	<0.223	43500	15600	452	117	<8.92	5.46

Explanation of Color Coding

<345	Analyte not detected above limit of detection
125	Analyte detected. There are no SCDM benchmarks established for sediment samples.
Concentration units are parts per million (ppm).	

Table 5 UDEQ/DERR Lower Silver Creek IA
Summary of the Soil Laboratory Analysis Results

			Laboratory Results for Analytes also analyzed with the XRF ¹⁰⁹ Cadmium source															Laboratory Results for Analytes also analyzed with the XRF ²⁴¹ Americium source									
Laboratory ID	Collection Date	21 Soil Samples (collected concurrently with an XRF sample)	Mo (Molybdenum) [SCDM=390]	Zr (Zirconium) [SCDM=ND]	Sr (Strontium) [SCDM=47,000]	Rb (Rubidium) [SCDM=ND]	Pb (Lead) [SCDM=400 ¹]	Se (Selenium) [SCDM=390]	As (Arsenic) [SCDM=23]	Hg (Mercury) [SCDM=23]	Zn (Zinc) [SCDM=23,000]	Cu (Copper) [SCDM=ND]	Ni (Nickel) [SCDM=1,600]	Co (Cobalt) [SCDM=ND]	Fe (Iron) [SCDM=ND]	Mn (Manganese) [SCDM=11,000]	Cr (Chromium) [SCDM=390]	La (Lanthanum) [SCDM=ND]	Ba (Barium) [SCDM=5,500]	Ce (Cerium) [SCDM=ND]	Te (Tellurium) [SCDM=ND]	Sb (Antimony) [SCDM=31]	Sn (Tin) [SCDM=ND]	Cd (Cadmium) [SCDM=390]	Ag (Silver) [SCDM=590]	Pd (Palladium) [SCDM=ND]	
200109901	11/6/01 10:35	LSC-SS - 56 (XRF 69)					6110	<27.4	337	6.6	22700	337	<27.4	8.15	33300	2320	10.1		28.8			214		108	29.7		
200109902	11/6/01 11:35	LSC-SS - 57 (XRF 72)					9600	<34.9	247	11.5	27800	554	<34.9	7.21	30100	1650	51.4		78.7			105		201	44.7		
200109903	11/6/01 14:05	LSC-SS - 58 (XRF 83)					4260	<29.9	215	4.5	17800	315	<29.9	6.85	30700	2310	12.1		30.1			130		84.3	29.1		
200109904	11/8/01 10:15	LSC-SS - 59 (XRF 99)					1300	<29.4	64.9	1.17	1440	146	<29.4	10.2	19700	943	19.7		179			31.6		9.74	11.1		
200109905	11/8/01 11:35	LSC-SS - 60 (XRF 103)					2440	<31.4	106	2.28	2580	235	<31.4	9.57	20300	1030	20		161			51.4		13.8	18.5		
200109906	11/9/01 9:15	LSC-SS - 61 (SW-06)					8.56	<44.3	77.1	32.2	3450	482	<44.3	5.23	13100	343	14.3		138			109		25.6	23.2		
200109907	11/9/01 10:45	LSC-SS - 62 (XRF 140)					14100	<30.7	647	15	36900	1330	<30.7	3.93	17200	2480	11.1		64.1			432		142	84.5		
200109908	11/9/01 12:50	LSC-SS - 63 (XRF 153)					16200	<30.3	459	15.9	38500	1330	<30.3	4.54	22100	2410	14.3		51.7			389		110	94		
200109909	11/9/01 15:00	LSC-SS - 64 (XRF 161)					1040	<38.1	48.1	1.31	1880	116	<38.1	10.8	18600	1240	17.4		189			21.9		12.8	8.38		
200109910	11/9/01 15:45	LSC-SS - 65 (XRF 166)					22300	<29.4	650	20.8	60400	1270	<29.4	4.7	20600	2800	8.59		47			482		295	90.3		
200109911	11/13/01 10:00	LSC-SS - 66 (XRF 173)					26000	<33.2	813	63.5	48700	1760	<33.2	8.97	21400	5680	18.4		124			568		265	145		
200109912	11/13/01 12:10	LSC-SS - 67 (XRF 190)					1510	<32.4	64.3	1.36	1610	148	<32.4	8.67	16700	837	16		170			29		10.1	11.5		
200109913	11/13/01 14:40	LSC-SS - 68 (XRF 201)					16700	<29.2	513	52.6	24100	1080	<29.2	7.46	26100	2300	13.4		84.1			310		121	80.9		
200109914	11/14/01 10:20	LSC-SS - 69 (XRF 211)					3360	<38.1	58.8	1.17	2220	220	<38.1	10.9	19400	495	18.3		222			40.7		23.2	11		
200109915	11/14/01 11:08	LSC-SS - 70 (XRF 217)					13500	<29	646	14.6	34000	1030	<29	3.33	19100	1750	8.03		55.9			364		178	88.1		
200109916	11/14/01 14:30	LSC-SS - 71 (XRF 237)					12400	<30.5	333	144.2	14700	1140	<30.5	9.62	22500	1600	8.51		117			364		81.6	100		
200109917	11/14/01 15:30	LSC-SS - 72 (XRF 244)					18400	<33.8	467	63.3	18000	1330	<33.8	5.38	19000	1370	17.8		236			322		82.8	68.1		
200109918	11/15/01 10:20	LSC-SS - 73 (XRF 256)					15600	<28.7	481	45.3	23400	1080	<28.7	6.31	22400	1980	13.8		101			269		110	76.4		
200109919	11/15/01 13:10	LSC-SS - 74 (XRF 271)					11100	<29.3	396	12.3	26700	725	<29.3	15.2	56700	2490	9.44		31.4			232		132	54.9		
200109920	11/15/01 14:10	LSC-SS - 75 (XRF 279)					10300	<28.1	359	5.7	23000	433	<28.1	8.03	42000	2060	9.9		22.6			189		118	87.9		
200109281	11/2/01 12:50	LSC-SS - 78 (XRF 283)					36100	<30.8	870	58.89	41100	2330	<30.8	7.02	23500	3080	19.1		141			548		207	131		

Explanation of Color Coding	
<345	Analyte not detected above limit of detection
125	Analyte detected, result below SCDM value
1741	Result above SCDM value
Concentration units are parts per million (ppm).	

Table 5 Soil Laboratory Results

Table 5 UDEQ/DERR Lower Silver Creek IA
Summary of the Soil Laboratory Analysis Results

Laboratory Results for Analytes not analyzed with the XRF.										
Lab ID	Collection Date	Sample (collected concurrently with SW samples)	Al (ppm) (SCDM=ND)	Be (ppm) (SCDM=390)	Ca (ppm) (SCDM=ND)	Mg (ppm) (SCDM=ND)	K (ppm) (SCDM=ND)	Na (ppm) (SCDM=ND)	Ti (ppm) (SCDM=ND)	V (ppm) (SCDM=550)
200109901	11/6/01 10:35	LSC-SS - 56 (XRF 69)	1640	<0.343	38200	11500	NR	NR	<13.7	5.83
200109902	11/6/01 11:35	LSC-SS - 57 (XRF 72)	9710	<0.437	55600	30500	NR	NR	<17.5	17.6
200109903	11/6/01 14:05	LSC-SS - 58 (XRF 83)	1720	<0.374	50200	16000	NR	NR	<14.9	5.92
200109904	11/8/01 10:15	LSC-SS - 59 (XRF 99)	18900	<0.368	4960	4630	NR	NR	<14.7	29.5
200109905	11/8/01 11:35	LSC-SS - 60 (XRF 103)	17800	<0.392	5220	4410	NR	NR	<15.7	32
200109906	11/9/01 9:15	LSC-SS - 61 (SW-06)	8070	<0.554	6070	3010	NR	NR	<22.1	35.1
200109907	11/9/01 10:45	LSC-SS - 62 (XRF 140)	2530	<0.384	23800	7010	NR	NR	<15.3	7.94
200109908	11/9/01 12:50	LSC-SS - 63 (XRF 153)	3180	<0.379	34700	10900	NR	NR	<15.2	9.63
200109909	11/9/01 15:00	LSC-SS - 64 (XRF 161)	14500	<0.476	10800	4540	NR	NR	<19	26.6
200109910	11/9/01 15:45	LSC-SS - 65 (XRF 166)	1740	<0.368	11900	5810	NR	NR	<14.7	6.6
200109911	11/13/01 10:00	LSC-SS - 66 (XRF 173)	5420	<0.415	31400	9270	NR	NR	<16.6	16.1
200109912	11/13/01 12:10	LSC-SS - 67 (XRF 190)	13900	<0.406	4900	3330	NR	NR	<16.2	29.6
200109913	11/13/01 14:40	LSC-SS - 68 (XRF 201)	6250	<0.365	24800	7470	NR	NR	<14.6	15.1
200109914	11/14/01 10:20	LSC-SS - 69 (XRF 211)	18300	<0.476	8340	5360	NR	NR	<19	25.8
200109915	11/14/01 11:08	LSC-SS - 70 (XRF 217)	1840	<0.363	28800	9000	NR	NR	<14.5	8.83
200109916	11/14/01 14:30	LSC-SS - 71 (XRF 237)	8630	<0.382	9810	3880	NR	NR	<15.3	12.6
200109917	11/14/01 15:30	LSC-SS - 72 (XRF 244)	10000	<0.422	14900	6300	NR	NR	<16.9	22.1
200109918	11/15/01 10:20	LSC-SS - 73 (XRF 256)	6260	<0.359	26300	7530	NR	NR	<14.4	15
200109919	11/15/01 13:10	LSC-SS - 74 (XRF 271)	2240	<0.366	34200	11100	NR	NR	<14.6	7.51
200109920	11/15/01 14:10	LSC-SS - 75 (XRF 279)	2020	<0.352	33000	12746	NR	NR	<14.1	7.23
200109921	11/2/01 12:50	LSC-SS - 78 (XRF 283)	8280	<0.385	17300	5890	1300	657	<15.4	26.3

Explanation of Color Coding	
<345	Analyte not detected above limit of detection
125	Analyte detected, result below SCDM value
1741	Result above SCDM value
Concentration units are parts per million (ppm).	

Table 6 UDEQ/DERR Lower Silver Creek IA
A comparison: Laboratory and XRF results of soil samples.

			Results of the Analytes of XRF ¹⁰⁹ Cd Source (Analytes not analyzed by the Laboratory)										Results of the Analytes detected by Laboratory Analysis and by XRF ¹⁰⁹ Cd Source																				
Lab ID	Collection Date	Sample	Mo (Molybdenum) (SCDM=390) XRF: +/-	Zr (Zirconium) (SCDM=ND) XRF: +/-	Sr (Strontium) (SCDM=41,000) XRF: +/-	Rb (Rubidium) (SCDM=ND) XRF: +/-	Pb (Lead) (Soil SCDM=400) XRF: +/-	Se (Selenium) (SCDM=390) XRF: +/-	As (Arsenic) (SCDM=23) XRF: +/-	Hg (Mercury) (SCDM=23) XRF: +/-	Zn (Zinc) (SCDM=23,000) XRF: +/-	Cu (Copper) (SCDM=ND) XRF: +/-	Ni (Nickel) (SCDM=1,000) XRF: +/-	Co (Cobalt) (SCDM=ND) XRF: +/-	Fe (Iron) (SCDM=ND) XRF: +/-	Mn (Manganese) (SCDM=11,000) XRF: +/-	Cr (Chromium) (SCDM=390) XRF: +/-																
200109901	11/6/01 10:35	LSC-SS - 56					6110	<27.4	337	6.6	22700	337	<27.4	8.15	33300	2320	10.1																
		XRF 69	<LOD*	13.8	62.7	5.3	125.5	7.2	<LOD*	8.7	4640	74.8	<LOD*	13.5	322.4	59.1	<LOD*	26.7	18598.4	220	678	130	<LOD*	127.65	<LOD*	210	21696	420	1929.6	290	546.4	230	
200109902	11/6/01 11:35	LSC-SS - 57					9600	<34.9	247	11.5	27800	554	<34.9	7.21	30100	1650	51.4																
		XRF 72	<LOD*	16.05	21	5	68.1	6.8	<LOD*	9.3	1649.6	55	<LOD*	12.75	92.3	46.6	<LOD*	25.35	12595.2	220	323	140	<LOD*	131.55	<LOD*	210	10899.2	380	1960	300	<LOD*	375	
200109903	11/6/01 14:05	LSC-SS - 58					4260	<29.9	215	4.5	17800	315	<29.9	6.85	30700	2310	12.1																
		XRF 83	<LOD*	16.05	52.8	6.4	190.3	9.8	18.2	7.6	4000	84.3	<LOD*	15.45	220.8	67.2	<LOD*	29.55	12697.6	210	328.6	130	<LOD*	135	233.4	140	12800	390	891.2	270	<LOD*	330	
200109904	11/8/01 10:15	LSC-SS - 59					1300	<29.4	64.9	1.17	1440	146	<29.4	10.2	19700	943	19.7																
		XRF 99	17.7	8.3	203.6	5.8	179.3	6	86.8	6.5	1580	34.3	<LOD*	8.1	68.8	28.9	<LOD*	12.75	1880	49.9	164.8	43.8	<LOD*	82.05	292.6	110	17792	310	1160	200	<LOD*	210	
200109905	11/8/01 11:35	LSC-SS - 60					2440	<31.4	106	2.28	2580	235	<31.4	9.57	20300	1030	20																
		XRF 103	22.1	7.1	131.7	4.5	147.5	5.1	62.9	5.3	1920	34.9	<LOD*	7.65	99.4	29.3	<LOD*	12.3	2560	53.2	220	44	<LOD*	70.35	234.4	86.7	12800	240	989.6	160	<LOD*	195	
200109906	11/9/01 9:15	LSC-SS - 61					8.56	<44.3	77.1	32.2	3450	482	<44.3	5.23	13100	343	14.3																
		XRF 133	<LOD*	8.25	<LOD*	4.2	54.6	4.4	17.8	4.3	3817.6	53.4	<LOD*	9.3	<LOD*	62.7	<LOD*	15.6	2209.6	52.2	243.2	43.7	<LOD*	60.3	93.5	61.8	5328	160	505.2	120	<LOD*	150	
200109907	11/9/01 10:45	LSC-SS - 62					14100	<30.7	647	15	38900	1330	<30.7	3.93	17200	2480	11.1																
		XRF 140	<LOD*	14.85	8.8	5.6	183.8	9.5	<LOD*	10.5	6764.8	110	<LOD*	17.25	263	78.2	<LOD*	34.65	27392	320	1160	170	<LOD*	142.8	<LOD*	165	8025.6	280	1480	240	<LOD*	345	
200109908	11/9/01 12:50	LSC-SS - 63					16200	<30.3	459	15.9	38500	1330	<30.3	4.54	22100	2410	14.3																
		XRF 153	<LOD*	18	38.4	6.7	62	6.6	<LOD*	12.45	6905.6	120	<LOD*	20.1	282.6	86.6	<LOD*	43.2	43699.2	520	1800	240	<LOD*	195	400	200	24691.2	570	2769.6	390	<LOD*	480	
200109909	11/9/01 15:00	LSC-SS - 64					1040	<38.1	48.1	1.31	1880	116	<38.1	10.8	18600	1240	17.4																
		XRF 161	<LOD*	9.6	114.9	4.2	193.6	5.4	58.7	5.1	644.4	20.2	<LOD*	6.15	49.9	17.7	<LOD*	9	1209.6	36.7	78.8	33.3	<LOD*	67.05	154.2	87.1	13798.4	250	1029.6	170	<LOD*	180	
200109910	11/9/01 15:45	LSC-SS - 65					22300	<29.4	650	20.8	60400	1270	<29.4	4.7	20600	2800	8.59																
		XRF 166	<LOD*	18.45	<LOD*	10.05	32.6	10.2	<LOD*	13.8	11699.2	180	<LOD*	25.2	694.4	120	<LOD*	58.05	67276.8	780	2659.2	310	<LOD*	240	<LOD*	315	23692.8	590	3648	440	<LOD*	555	
200109911	11/13/01 10:00	LSC-SS - 66					26000	<33.2	913	63.5	48700	1760	<33.2	8.97	21400	5680	18.4																
		XRF 173	<LOD*	24.45	<LOD*	14.4	65.2	16.5	35	15.8	29386.8	410	<LOD*	43.5	2160	220	<LOD*	83.25	53862.4	750	4188.8	340	<LOD*	315	<LOD*	510	56064	1100	11795.2	800	1480	640	
200109912	11/13/01 12:10	LSC-SS - 67					1510	<32.4	64.3	1.36	1610	148	<32.4	8.67	16700	837	16																
		XRF 190	16.2	9.9	140.5	6.5	206.2	8.1	80.6	8.1	1549.6	43.4	<LOD*	9.9	120.2	37.1	<LOD*	15.75	1868.8	63.6	137.9	55.3	<LOD*	105.75	<LOD*	210	18393.6	400	686.4	250	<LOD*	270	
200109913	11/13/01 14:40	LSC-SS - 68					16700	<29.2	513	52.6	24100	1080	<29.2	7.46	26100	2300	13.4																
		XRF 201	<LOD*	16.65	56.4	7	97.3	9.7	17.2	8.7	14195.2	170	<LOD*	22.2	508.4	110	<LOD*	57.6	29.1	26393.6	310	2000	180	<LOD*	165	<LOD*	255	26188.8	510	2828.8	360	<LOD*	420
200109914	11/14/01 10:20	LSC-SS - 69					3360	<38.1	58.8	1.17	2220	220	<38.1	10.9	19400	495	18.3																
		XRF 211	21.9	9.1	132.1	5.8	179.6	7	84.6	7.5	798.8	29.3	<LOD*	8.4	<LOD*	37.35	<LOD*	12.3	1069.6	46	94.8	43.6	<LOD*	92.4	<LOD*	180	16499.2	360	1200	240	<LOD*	240	
200109915	11/14/01 11:08	LSC-SS - 70					13500	<29	646	14.6	34000	1030	<29	3.33	19100	1750	8.03																
		XRF 217	<LOD*	14.85	26.5	5.5	42	7.3	<LOD*	10.05	9120	120	<LOD*	18	730.8	86.4	<LOD*	38.5	24.5	27392	300	1788.8	170	<LOD*	143.85	<LOD*	195	15398.4	370	1620	270	<LOD*	345
200109916	11/14/01 14:30	LSC-SS - 71					12400	<30.5	333	144.2	14700	1140	<30.5	9.62	22500	1600	8.51																
		XRF 237	<LOD*	18.3	45.4	7.8	130.5	11.5	<LOD*	14.25	15091.2	200	<LOD*	25.2	<LOD*	195	142.4	32.7	16998.4	260	2259.2	170	<LOD*	195	389.6	210	30592	630	2760	410	<LOD*	480	
200109917	11/14/01 15:30	LSC-SS - 72					18400	<33.8	487	63.3	18000	1330	<33.8	5.38	19000	1370	17.8																
		XRF 244	<LOD*	15.6	<LOD*	10.35	105.8	11.2	22.2	9.9	22195.2	230	<LOD*	26.4	567.6	140	<LOD*	132.4	34	23795.2	280	2579.2	170	<LOD*	165	<LOD*	240	20492.8	440	2409.6	330	<LOD*	405
200109918	11/15/01 10:20	LSC-SS - 73					15600	<28.7	481	45.3	23400	1080	<28.7	6.31	22400	1980	13.8																
		XRF 256	<LOD*	17.55	48.8	7.3	110.8	10.4	20.5	9.2	12595.2	170	<LOD*	22.95	417.2	110	<LOD*	44.25	22092.8	300	1360	170	<LOD*	165	<LOD*	255	21094.4	500	2899.2	360	<LOD*	435	
200109919	11/15/01 13:10	LSC-SS - 74					11100	<29.3	396	12.3	26700	725	<29.3	15.2	56700	2490	9.44																
		XRF 271	<LOD*	19.2	109.8	8.1	67.3	9.1	<LOD*	12.75	8697.6	140	<LOD*	21.75	520	99.4	<LOD*	42.45	27084.8	360	1809.6	200	<LOD*	195	365	240	39475.2	740	2640	450	<LOD*	495	
200109920	11/15/01 14:10	LSC-SS - 75					16300	<28.1	359	5.7	23000	433	<28.1	8.03	42000	2060	9.9																
		XRF 279	<LOD*	15.45	65.8	6	55.3	7.2	16.3	7.2	7116.8	100	<LOD*	16.95	364.8	77	<LOD*	33.6	24294.4	280	1329.6	160	<LOD*	165	407.8	200	35379.2	590	2708.8	370	<LOD*	405	
200109281	11/2/01 12:50	LSC-SS - 78					36100	<30.8	870	58.89	41100	2330	<30.8	7.02	23500	3080	19.1																
		XRF 283	<LOD*	21.6	<LOD*	14.55	69.9	15.7	<LOD*	20.4	37196.8	430	<LOD*	39.9	1369.6	210	<LOD*	76.8	53862.4	640	3859.2	290	<LOD*	270	<LOD*	345	31283.2	670	3019.2	470	<LOD*	600	

Explanation of Color Coding:		
NA	39	Parameter not analyzed
<LOD*	39	Result less than limit of detection
<LOD*	41	Result less than limit of detection, limit of detection greater than SCDM benchmark
45.2	21.3	Maximum result (result (ppm) + error (+/-)) below SCDM benchmark
381	53	Result, including error, may be above or below SCDM benchmark
1241	52	Minimum result (result (ppm) - error (+/-)) greater than SCDM benchmark
Concentration units are parts per million (ppm).		

Table 6 A comparison of Laboratory and XRF results of soil samples.

Table 6 UDEQ/DERR Lower Silver Creek IA
A comparison: Laboratory and XRF results of soil samples.

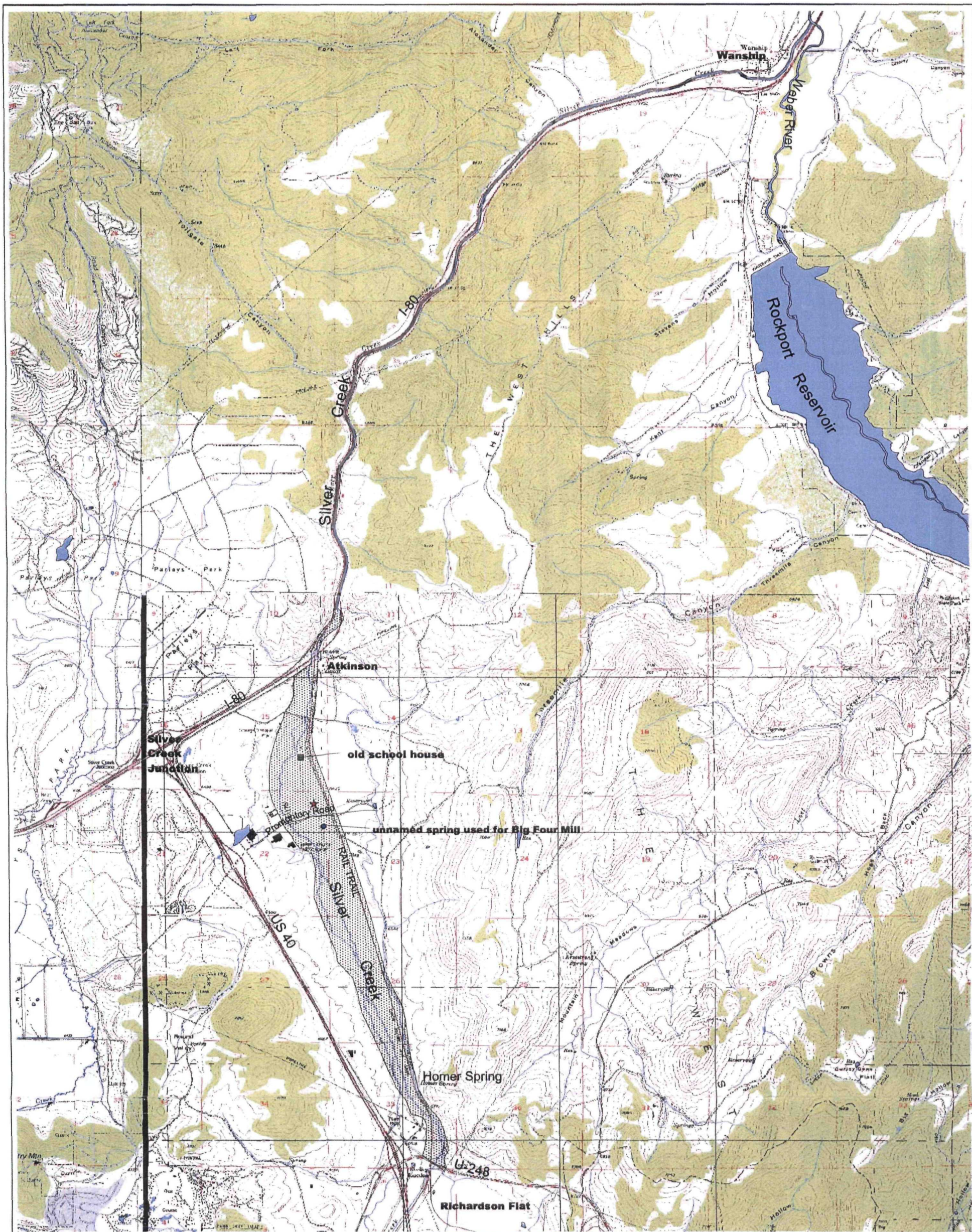
Laboratory Results for Analytes not analyzed with the XRF.													
Lab ID	Collection Date	Sample	Ba (Barium) (SCDM=5,500)	Sb (Antimony) (SCDM=5)	Cd (Cadmium) (SCDM=50)	Ag (Silver) (SCDM=300)	Al (Aluminum) (SCDM=ND)	Ba (Barium) (SCDM=5,500)	Ca (Calcium) (SCDM=ND)	Mg (Magnesium) (SCDM=ND)	K (Potassium) (SCDM=ND)	Na (Sodium) (SCDM=ND)	Tl (Thallium) (SCDM=ND)
200109901	11/6/01 10:35	LSC-SS - 56	28.8	214	199	29.7	1640	<0.343	38200	11500	NR	NR	<13.7
		XRF 69											
200109902	11/6/01 11:35	LSC-SS - 57	78.7	105	201	44.7	9710	<0.437	55600	30500	NR	NR	<17.5
		XRF 72											
200109903	11/6/01 14:05	LSC-SS - 58	30.1	199	84.3	29.1	1720	<0.374	50200	16000	NR	NR	<14.9
		XRF 83											
200109904	11/8/01 10:15	LSC-SS - 59	179	31.6	9.74	11.1	18900	<0.368	4960	4630	NR	NR	<14.7
		XRF 99											
200109905	11/8/01 11:35	LSC-SS - 60	161	81.4	13.8	18.5	17800	<0.392	5220	4410	NR	NR	<15.7
		XRF 103											
200109906	11/9/01 9:15	LSC-SS - 61	138	109	25.8	23.2	8070	<0.554	6070	3010	NR	NR	<22.1
		XRF 133											
200109907	11/9/01 10:45	LSC-SS - 62	64.1	432	142	84.5	2530	<0.384	23800	7010	NR	NR	<15.3
		XRF 140											
200109908	11/9/01 12:50	LSC-SS - 63	51.7	389	110	94	3160	<0.378	34700	10900	NR	NR	<15.2
		XRF 153											
200109909	11/9/01 15:00	LSC-SS - 64	189	21.9	12.8	8.38	14500	<0.476	10800	4540	NR	NR	<19
		XRF 161											
200109910	11/9/01 15:45	LSC-SS - 65	47	482	295	90.3	1740	<0.368	11900	5810	NR	NR	<14.7
		XRF 166											
200109911	11/13/01 10:00	LSC-SS - 66	124	569	265	145	5420	<0.415	31400	9270	NR	NR	<16.6
		XRF 173											
200109912	11/13/01 12:10	LSC-SS - 67	170	29	10.1	11.5	13900	<0.406	4900	3330	NR	NR	<16.2
		XRF 190											
200109913	11/13/01 14:40	LSC-SS - 68	84.1	316	121	80.9	6250	<0.365	24800	7470	NR	NR	<14.6
		XRF 201											
200109914	11/14/01 10:20	LSC-SS - 69	222	40.7	23.2	11	18300	<0.476	8340	5360	NR	NR	<19
		XRF 211											
200109915	11/14/01 11:08	LSC-SS - 70	55.9	364	179	88.1	1840	<0.363	28800	9000	NR	NR	<14.5
		XRF 217											
200109916	11/14/01 14:30	LSC-SS - 71	117	364	81.6	100	8630	<0.382	9810	3880	NR	NR	<15.3
		XRF 237											
200109917	11/14/01 15:30	LSC-SS - 72	236	322	82.8	68.1	10000	<0.422	14900	6300	NR	NR	<16.9
		XRF 244											
200109918	11/15/01 10:20	LSC-SS - 73	101	259	110	76.4	6260	<0.359	26300	7530	NR	NR	<14.4
		XRF 256											
200109919	11/15/01 13:10	LSC-SS - 74	31.4	232	132	54.9	2240	<0.366	34200	11100	NR	NR	<14.6
		XRF 271											
200109920	11/15/01 14:10	LSC-SS - 75	22.6	189	118	87.9	2020	<0.352	33000	12746	NR	NR	<14.1
		XRF 279											
200109921	11/2/01 12:50	LSC-SS - 76	141	548	207	131	8280	<0.385	17300	5690	1366	657	<15.4
		XRF 283											

Explanation of Color Coding:

NA		Parameter not analyzed
<LOD*	39	Result less than limit of detection
<LOD*	41	Result less than limit of detection, limit of detection greater than SCDM benchmark
45.2	21.3	Maximum result (result (ppm) + error (+/-)) below SCDM benchmark
381	53	Result, including error, may be above or below SCDM benchmark
1241	52	Minimum result (result (ppm) - error (+/-)) greater than SCDM benchmark

Concentration units are parts per million (ppm).

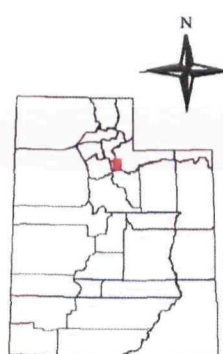
FIGURES



0.5 0 0.5 1 1.5 2 2.5 Miles

Legend

- ★ Historical Big Four Mill Site and currently the site of a Pace ranch bldg.
- Site area - Southern portion
- Site area - Northern portion
- Road and Trails (Dataadmin.trrrd_st10.geometry)
- Rail Trail (Dataadmin.trrrd_st10.geometry)
- Water Courses (Dataadmin.hdwco_qd24.geometry)
- Water bodies (Dataadmin.hdwbo_qd24.geometry)



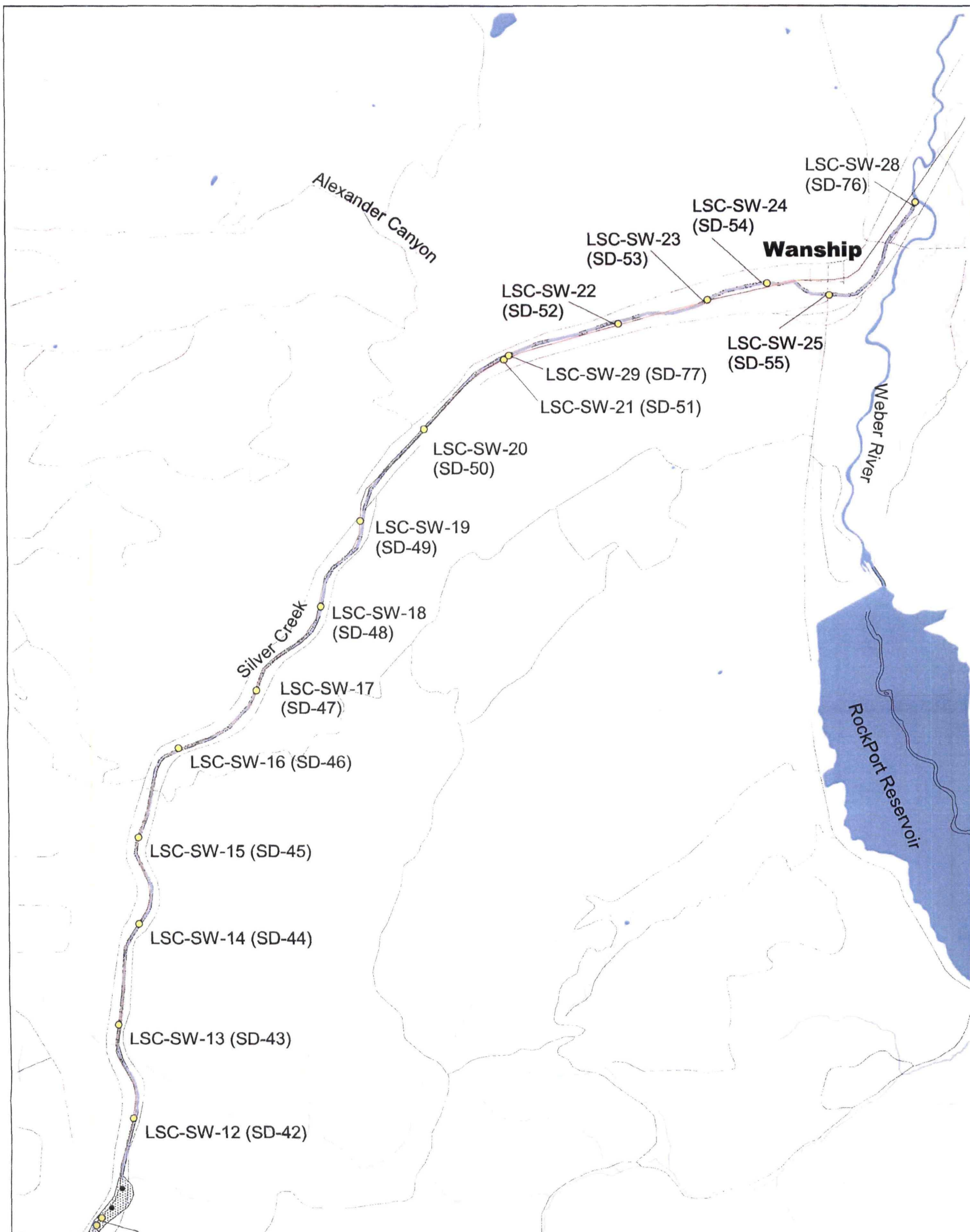
Site Location

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 1
Site Location Map

Lower Silver Creek IA
Summit County, Utah

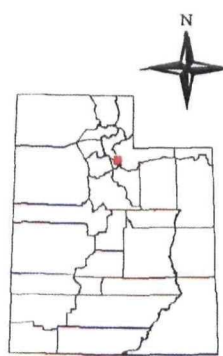
By: AMT Date: April 30, 2002



0.5 0 0.5 1 1.5 Miles

Legend

- Laboratory-Analyzed Sample Locations - Soil samples (SS) and Surface water (SW) samples (collected concurrently with sediment (SD) samples)
- XRF soil sample locations.
- ▨ LSC Site - southern portion
- ▨ LSC Site - northern portion
- Rail Trail
- Water courses (Dataadmin.hdwco_qd24.geometry)
- Trails and Roads (Dataadmin.trrds_qu10.geometry)



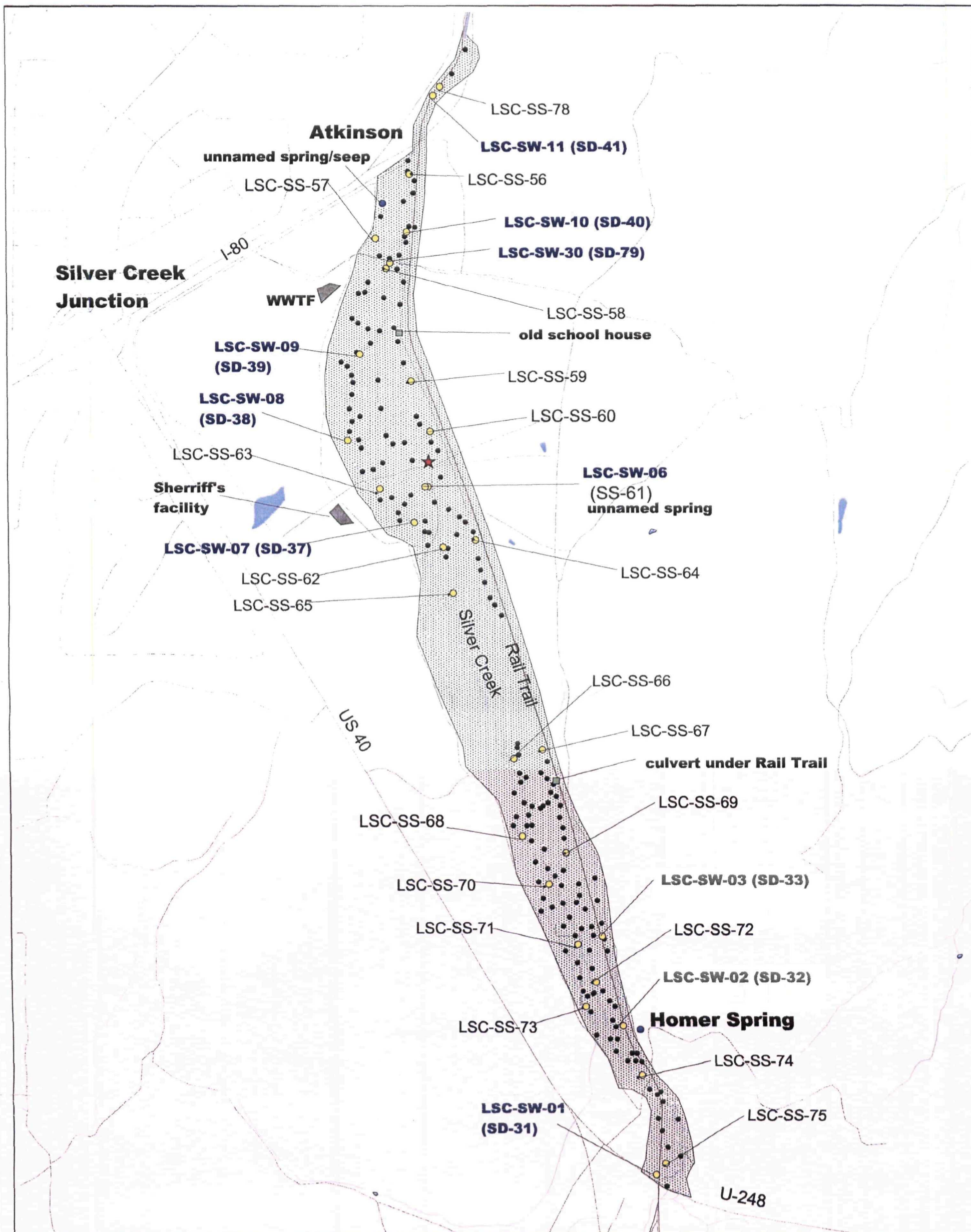
Site Location

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 2
Sample Locations Map
Northern Portion of the LSC Site

Lower Silver Creek IA
Summit County, Utah

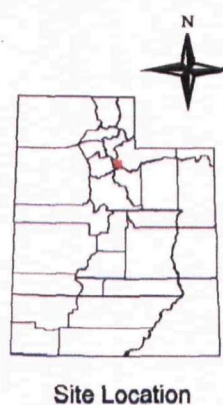
By: AMT Date: April 30, 2002



0.5 0 0.5 1 Miles

Legend

- Laboratory-Analyzed Samples locations - Soil samples (SS) and surface water (SW) samples (collected concurrently with sediment (SD) samples)
- XRF soil sample locations.
- ★ Historical Big Four Mill Site and currently the site of a Pace ranch building
- LSC Site - southern portion
- Trails and Roads (Dataadmin.trrd_st10.geometry)
- Water courses (Dataadmin.hdwco_qd24.geometry)
- Rail Trail
- WWTF = waste water treatment facility

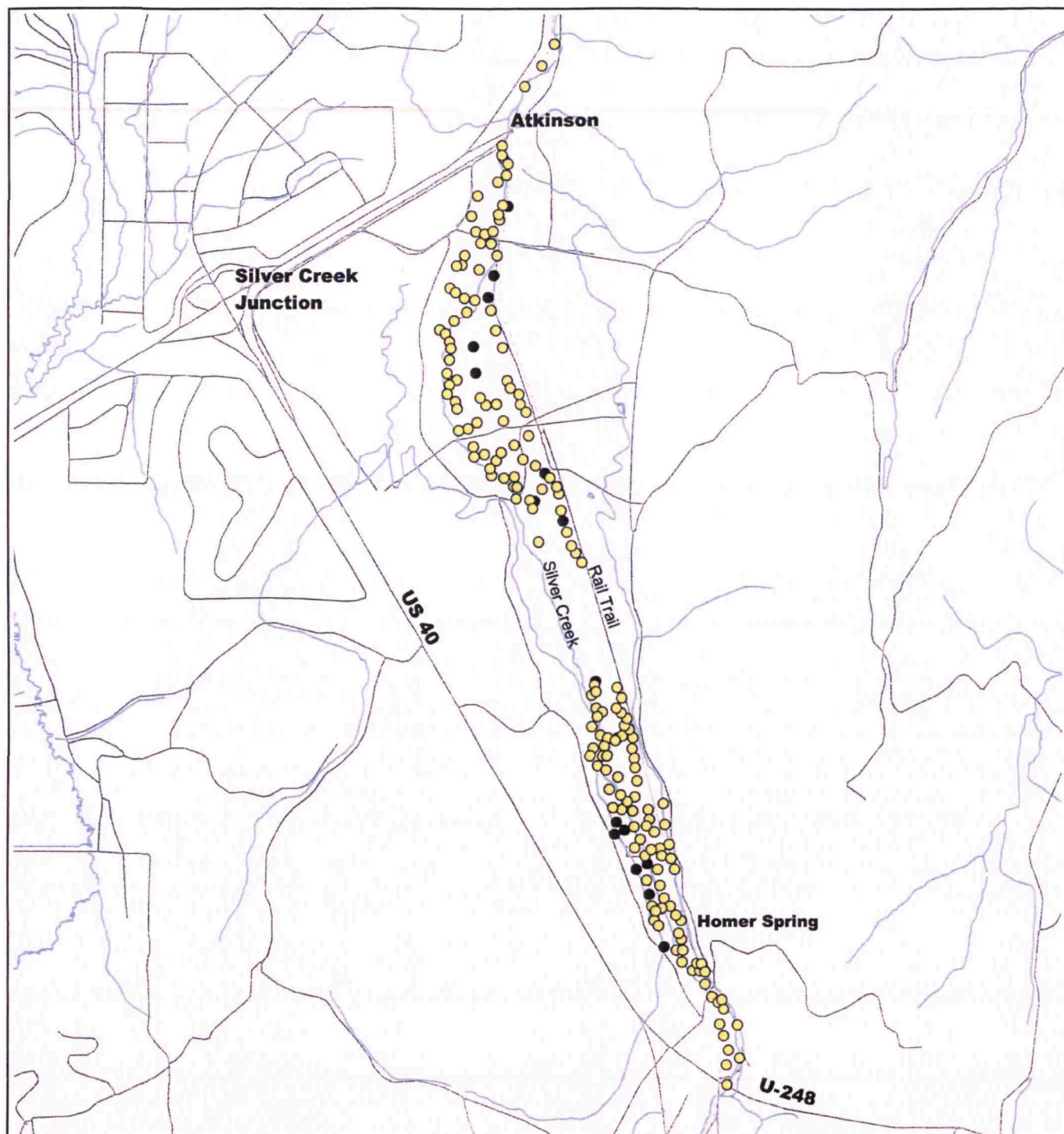


Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 3
Sample Location Map
Southern Portion of the LSC Site

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: April 30, 2002



0 0.2 0.4 0.6 0.8 1 1.2 1.4 Miles

Legend

- XRF Locations - Lead values exceeding 400 ppm
- XRF Locations - Lead values not exceeding 400 ppm
- Roads and Trails (Dataadmin.trds_qu10.geometry)
- Water Courses (Dataadmin.hdwco_qd24.geometry)
- Roads and ditches.shp



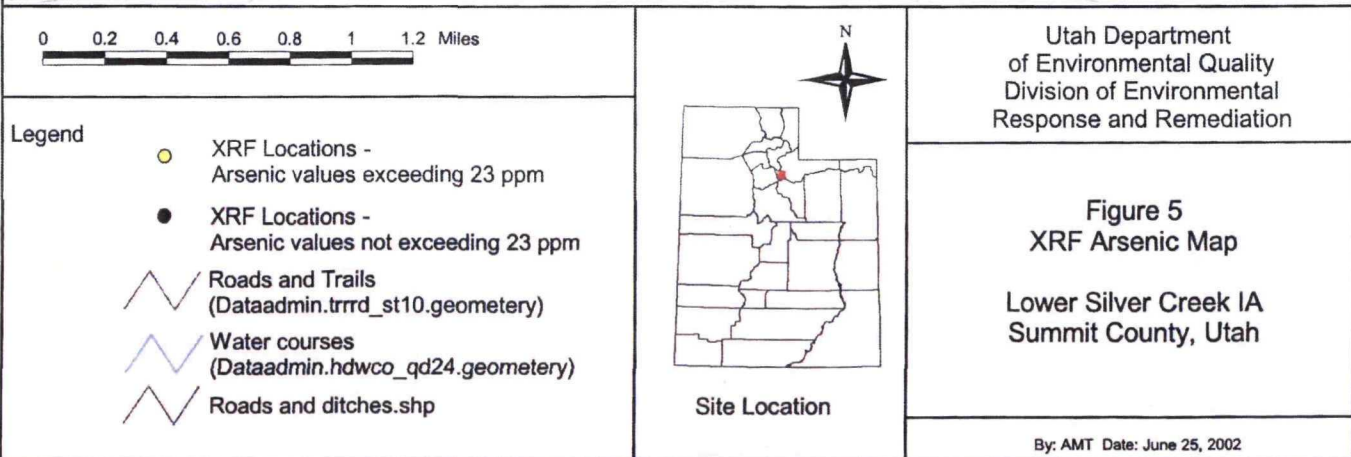
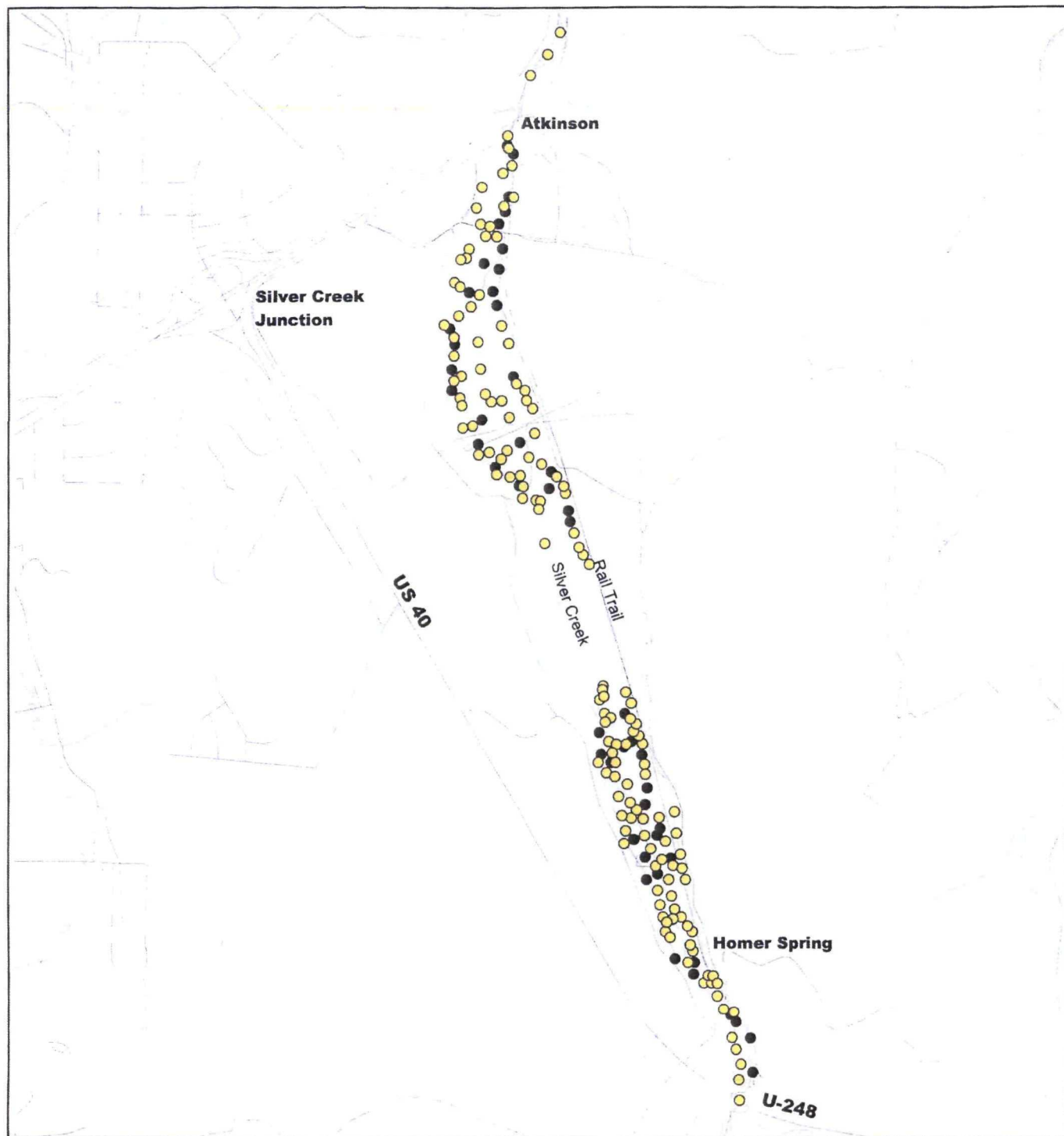
Site Location

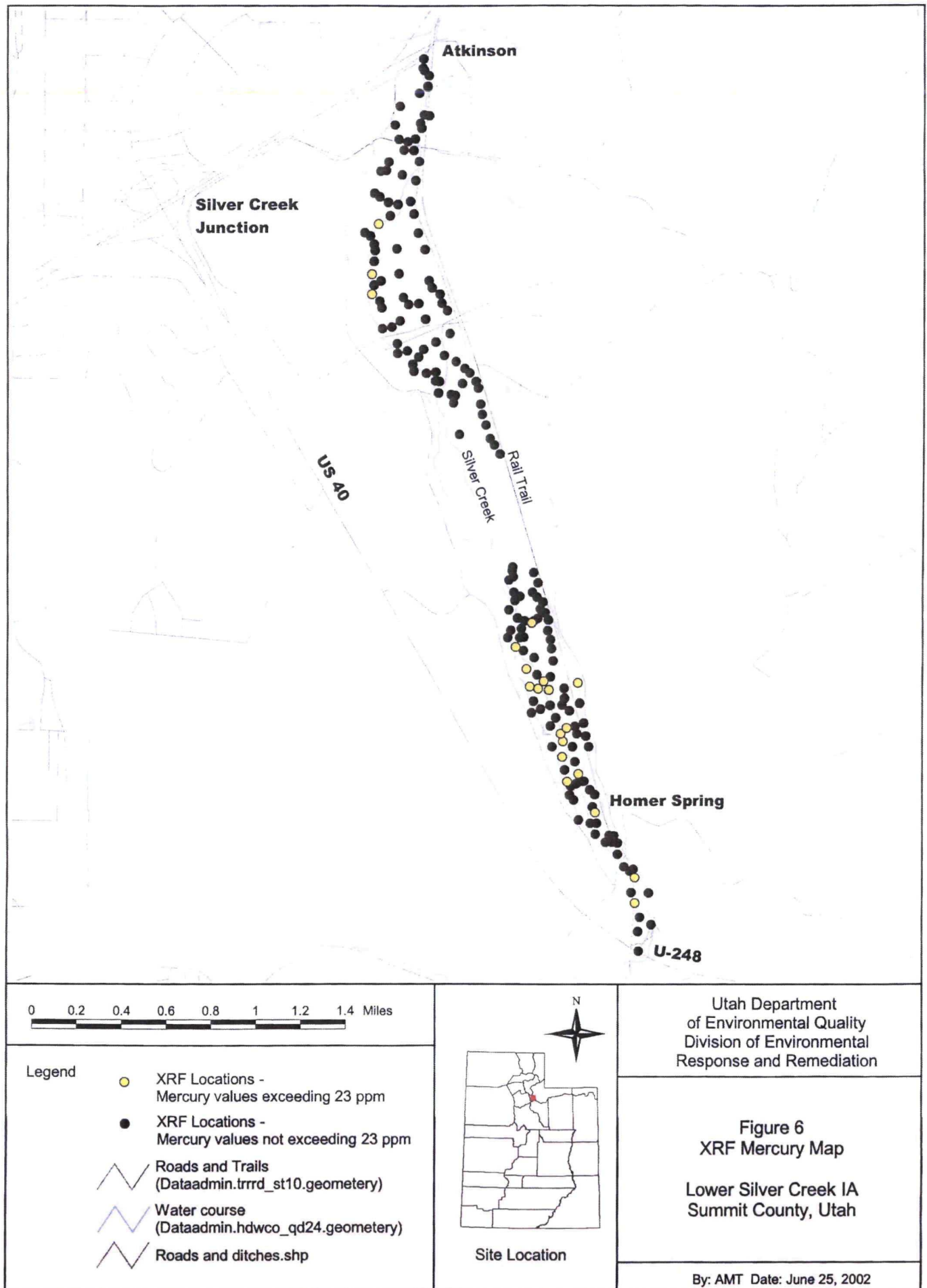
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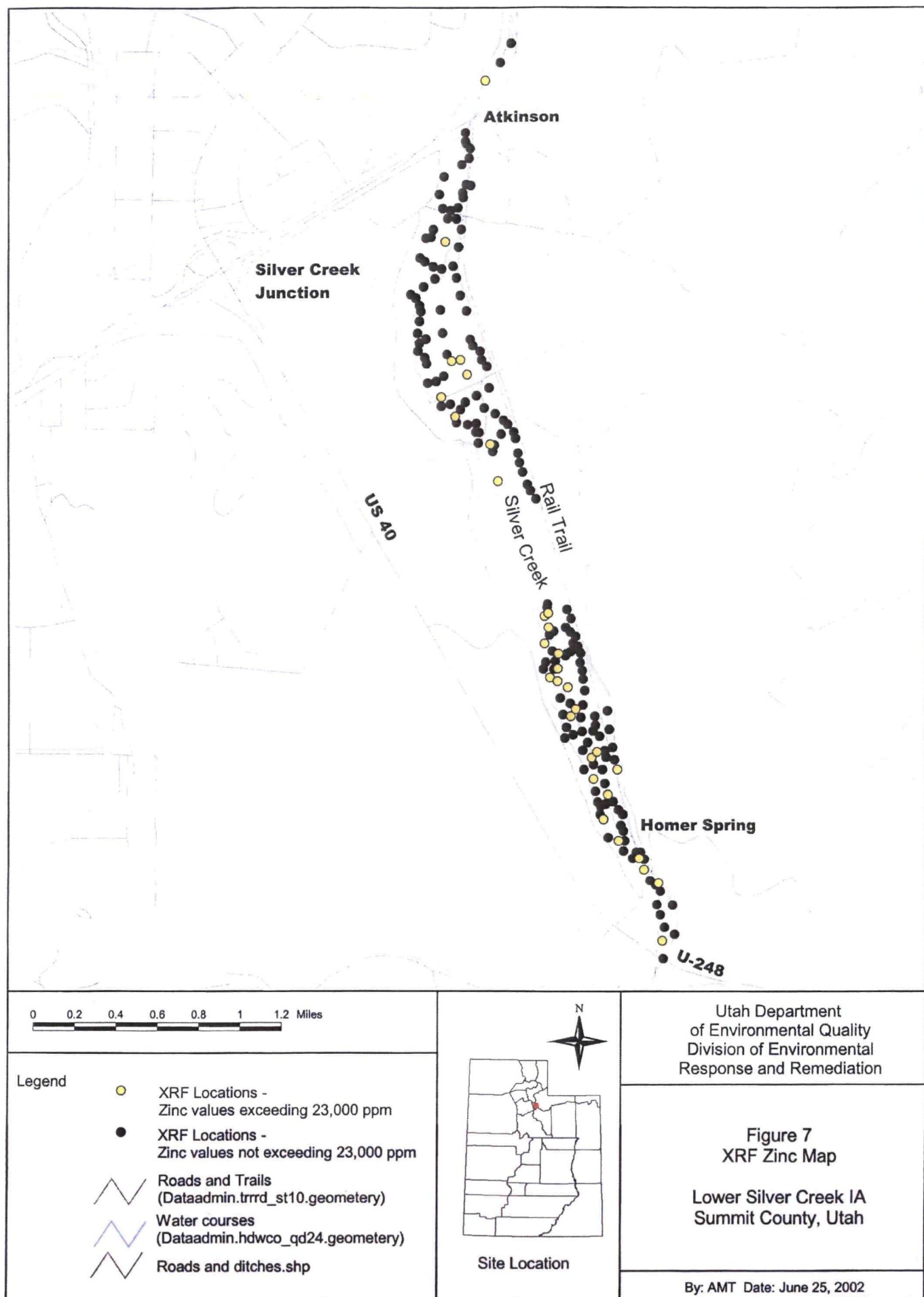
Figure 4
XRF Lead Map

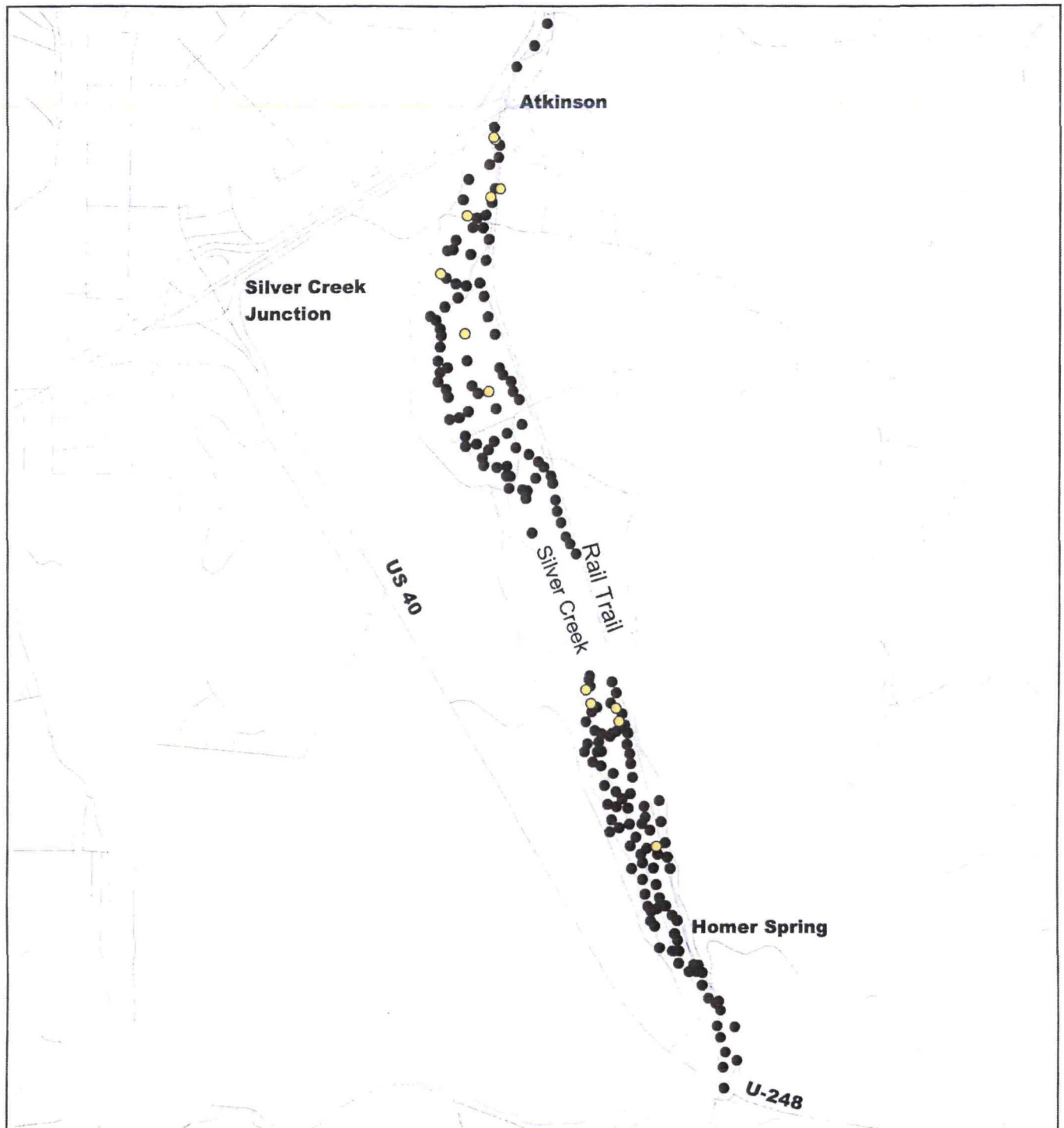
Lower Silver Creek IA
Summit County, Utah

By: AMT Date: June 25, 2002












0 0.2 0.4 0.6 0.8 1 1.2 Miles

Legend

- XRF Locations - Chromium values exceeding 390 ppm
- XRF Locations - Chromium values not exceeding 390 ppm
-  Roads and Trails (Dataadmin.trrrd_st10.geometry)
-  Water courses (Dataadmin.hdwco_qd24.geometry)
-  Roads and ditches.shp



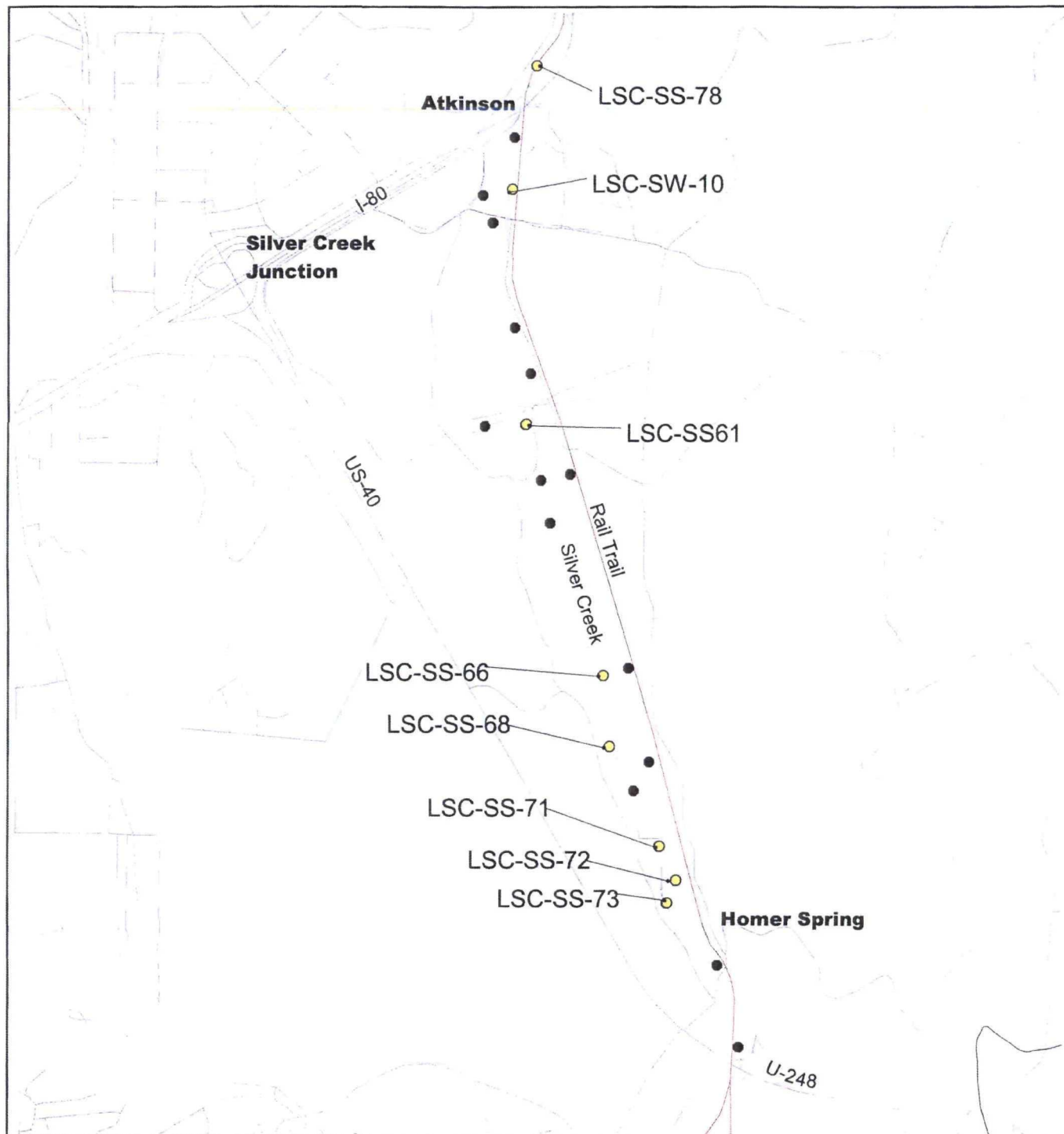
Site Location

Utah Department
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Division of Environmental
Response and Remediation

Figure 8
XRF Chromium Map

Lower Silver Creek IA
Summit County, Utah

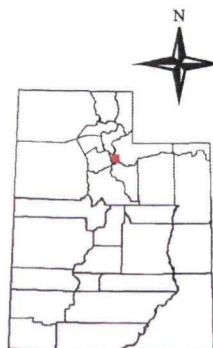
By: AMT Date: June 25, 2002



0.5 0 0.5 1 Miles

Legend

- Laboratory-analyzed soil sample locations-
Mercury values exceeding 23 ppm.
- Laboratory-analyzed soil sample locations-
Mercury values not exceeding 23 ppm.
- Rail Trail
(Dataadmin.trrd_st10.geometry)
- Roads and Trails
(Dataadmin.tradd_co10.geometry)
- Water Courses
(Dataadmin.hdwco_qd24.geometry)



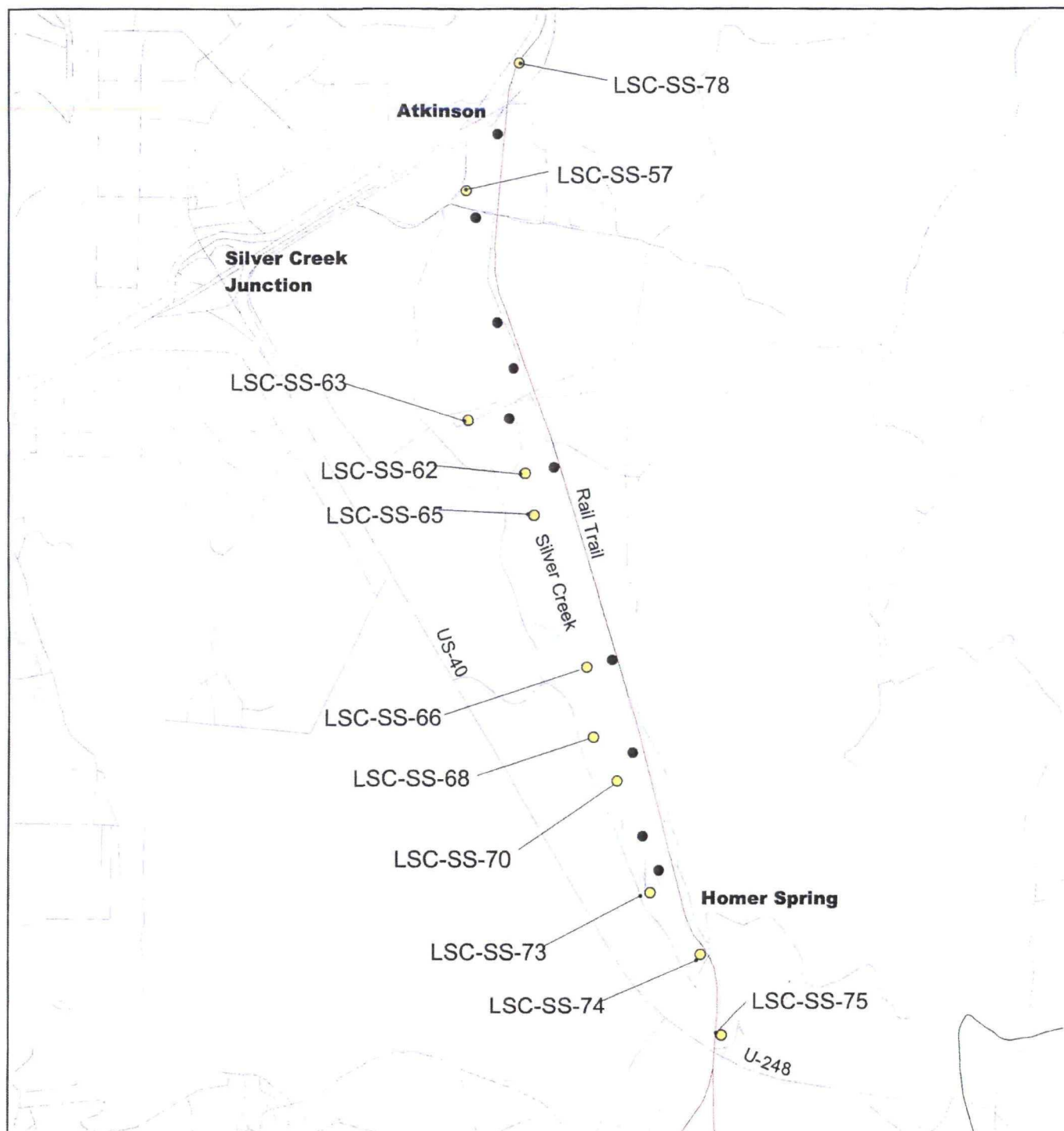
Site Location

Utah Department
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Division of Environmental
Response and Remediation

Figure 9
Laboratory Results Mercury Map
(soil samples)

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: June 26, 2002



0.5 0 0.5 1 Miles

Legend

- Laboratory-analyzed soil sample locations-
Zinc values exceeding 23,000 ppm
- Laboratory-analyzed soil sample locations-
Zinc values not exceeding 23,000 ppm
- Rail Trail
(Dataadmin.trrrd_st10.geometry)
- Roads and Trails
(Dataadmin.tradd_co10.geometry)
- Water Courses
(Dataadmin.hdwco_qd24.geometry)



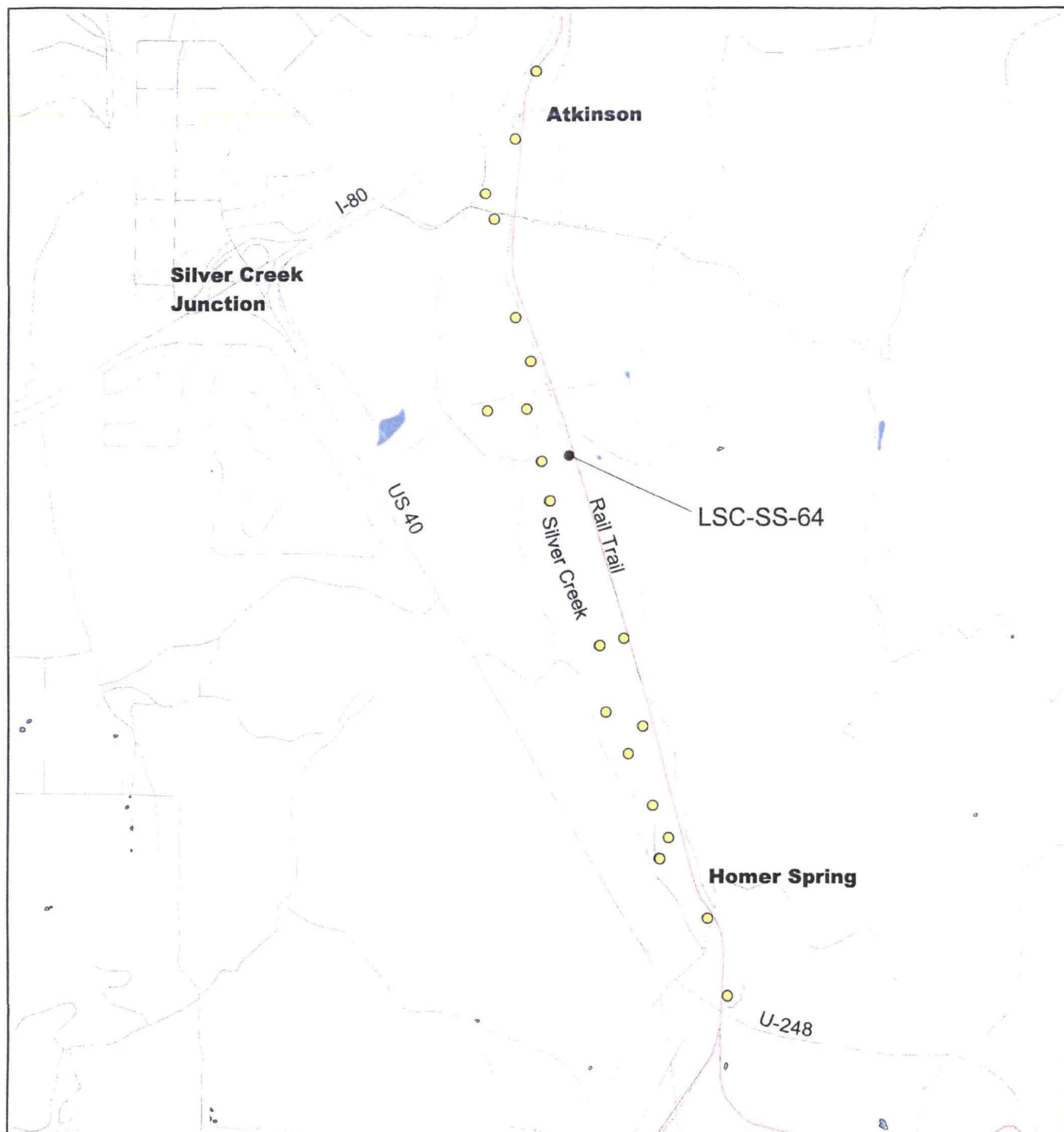
Site Location

Utah Department
of Environmental Quality
Division of Environmental
Response and Remediation

Figure 10
Laboratory Results Zinc Map
(soil samples)

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: June 25, 2002



0.4 0 0.4 0.8 Miles

Legend

- Laboratory-analyzed soil sample results - Antimony values exceeding 31 ppm
- Laboratory-analyzed soil sample results - Antimony values not exceeding 31 ppm
- Rail Trail
(Dataadmin.trrrd_st10.geometry)
- Roads and Trails
(Dataadmin.trrrd_qd10.geometry)
- Water courses
(Dataadmin.hdwco_qd24.geometry)



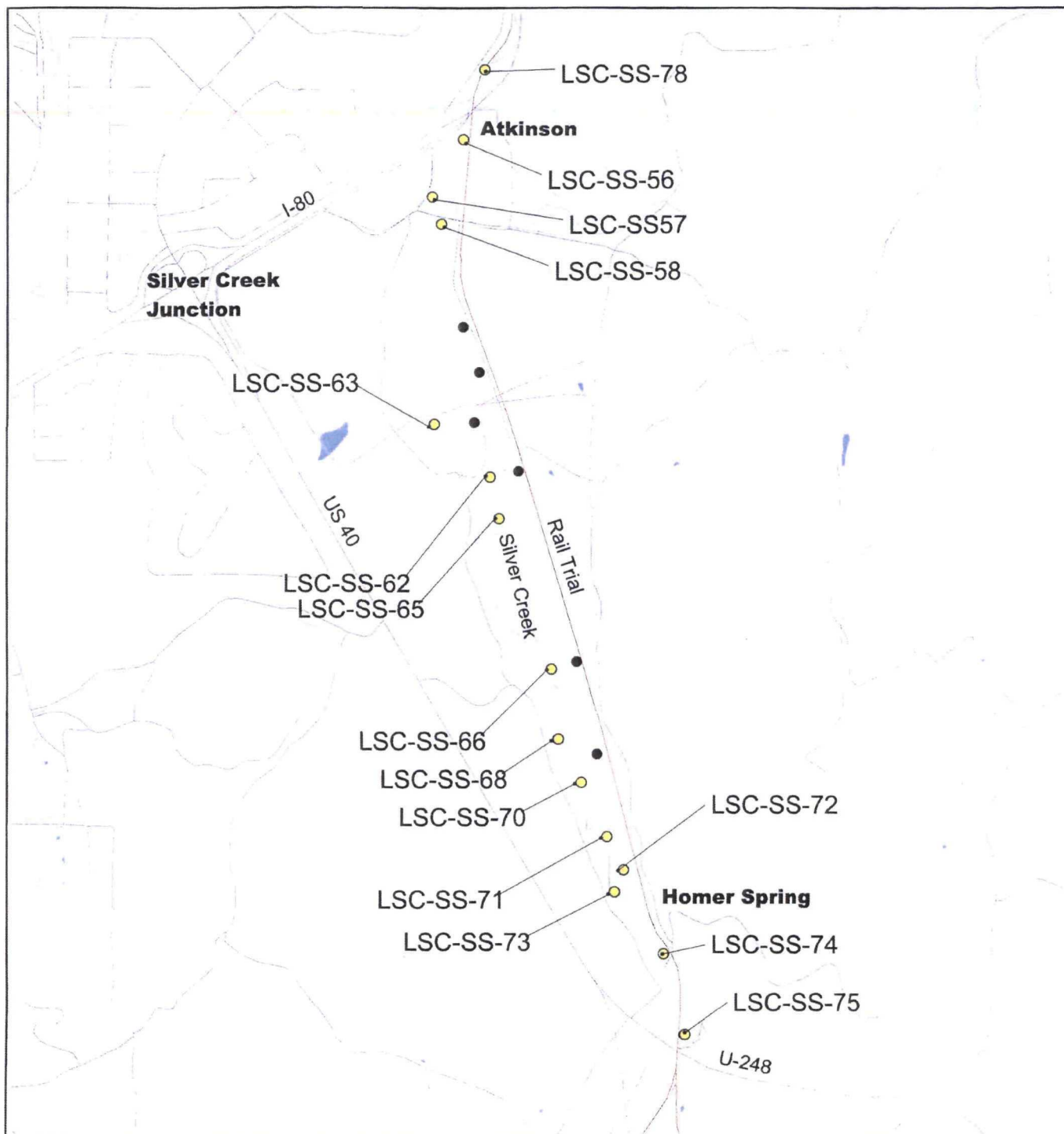
Site Location

Utah Department
of Environmental Quality
Division of Environmental
Response and Remediation

Figure 11
Laboratory Results Antimony Map
(soil samples)

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: June 26, 2002



0.5 0 0.5 1 Miles

Legend

- Laboratory-analyzed soil sample results-
Cadmium values exceeding 39 ppm.
- Laboratory-analyzed soil sample results-
Cadmium values not exceeding 39 ppm.
- Rail Trail
- Roads and Trails
(Dataadmin.trrds_qu10.geometry)
- Water Courses
(Dataadmin.hdwco_qd24.geometry)



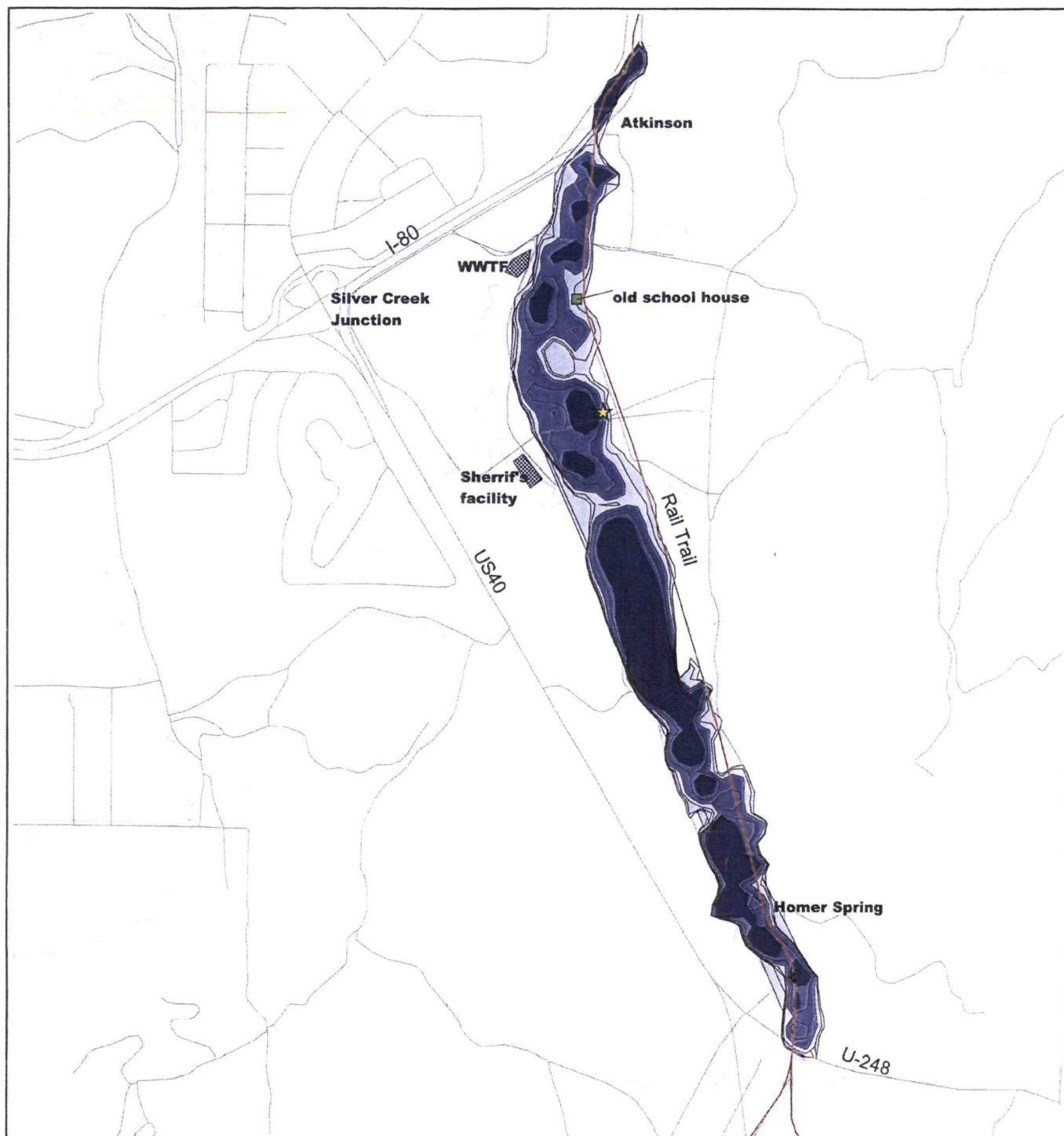
Site Location

Utah Department
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Division of Environmental
Response and Remediation

Figure 12
Laboratory Results Cadmium Map
(soil samples)

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: June 26, 2002



0.5 0 0.5 1 Miles

Legend

- ★ Historical Big Four Mill Site and currently the site of a Pace Ranch bldg.

Lead concentrations (ppm) (Pb poly.shp)

0 - 2,000	8,000 - 10,000
2,000 - 6,000	>10,000
6,000 - 8,000	

- Water courses (Dataadmin.hdwco_qd24.geometry)
- Roads and Trails (Dataadmin.trrds_qu10.geometry)
- Rail Trail (Dataadmin.trrd_st10.geometry)

WWTF: waste water treatment facility



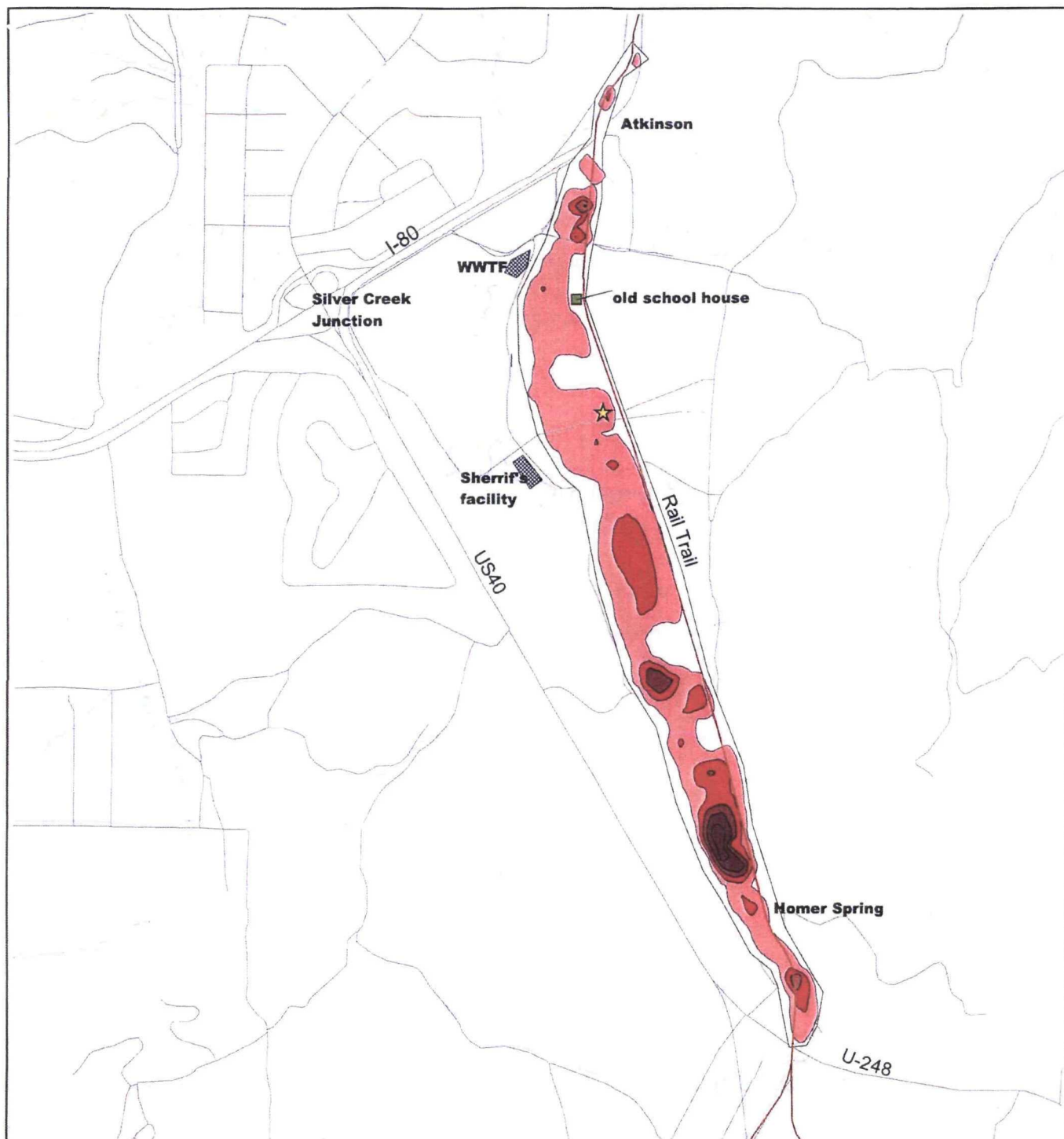
Site Location

Utah Department
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Division of Environmental
Response and Remediation

Figure 13
XRF Lead Concentration Map

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: August 2, 2002



0 0.4 0.8 1.2 Miles

Legend

★ Historical Big Four Mill Site and currently the site of a Pace Ranch bldg.

Mercury concentrations (ppm) (Hg poly.shp)

0 - 25 ppb	75 - 100 ppb
25 - 50 ppb	100 - 150 ppb
50 - 75 ppb	

Water courses (Dataadmin.hdwco_qd24.geometry)

Roads and Trails (Dataadmin.trrds_qu10.geometry)

Rail Trail (Dataadmin.trrrd_st10.geometry)

WWTF: waste water treatment facility



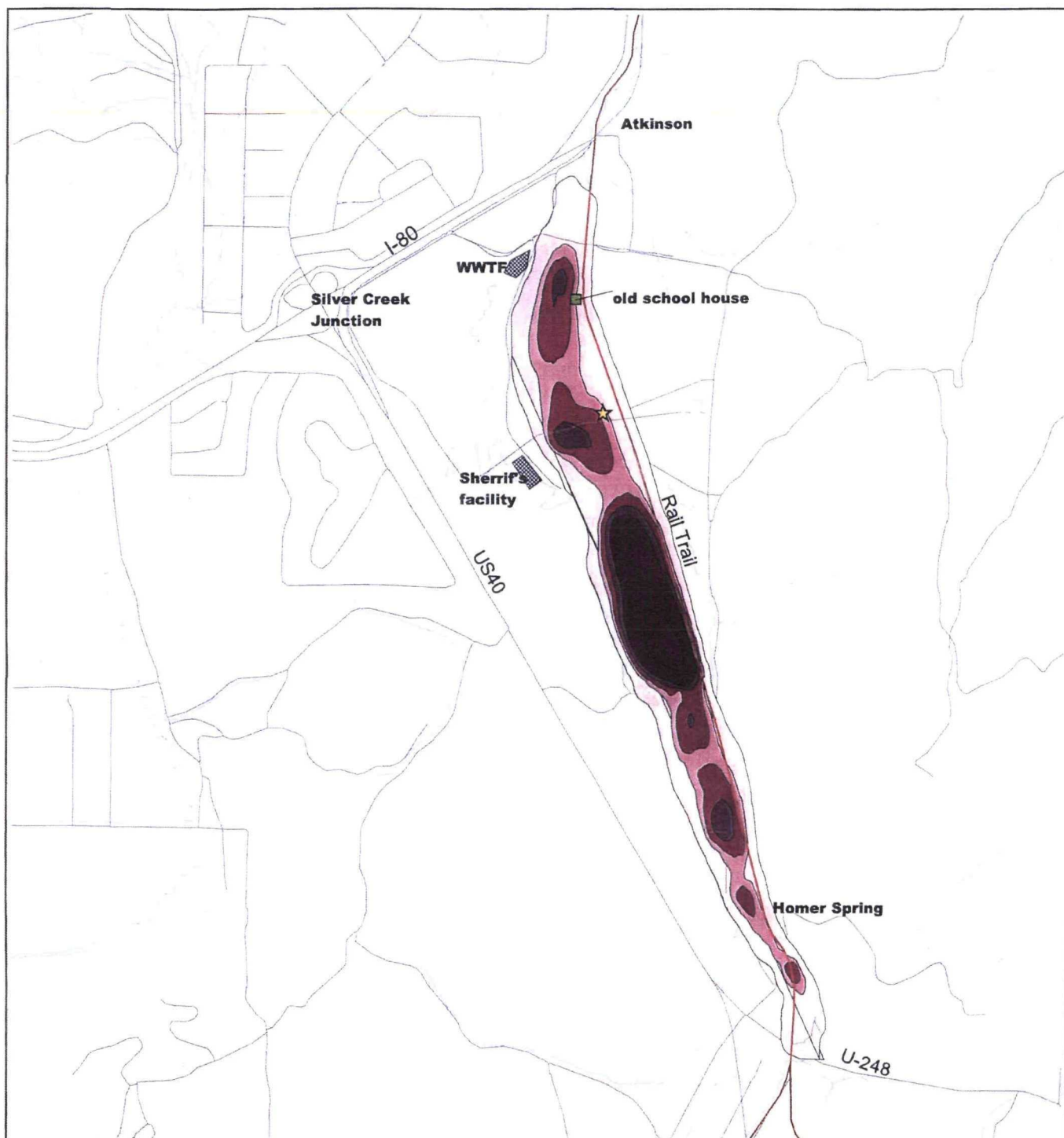
Site Location

Utah Department
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Division of Environmental
Response and Remediation

Figure 14
XRF Mercury Concentration Map

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: August 2, 2002



0 0.4 0.8 1.2 Miles

Legend

★ Historical big Four Mill Site and currently the site of a Pace Ranch bldg.

Zinc concentrations (ppm) (Zn poly.shp)

0 - 20,000 40,000 - 50,000

20,000 - 30,000 >50,000

30,000 - 40,000

Water courses (Dataadmin.hdwco_qd24.geometry)

Roads and Trails (Dataadmin.trrds_qu10.geometry)

Rail Trail (Dataadmin.trrrd_st10.geometry)

WWTF = waste water treatment facility



Site Location

Utah Department
of Environmental Quality
Division of Environmental
Response and Remediation

Figure 15
XRF Zinc Concentration Map

Lower Silver Creek IA
Summit County, Utah

By: AMT Date: August 2, 2002

APPENDIX A

Field Activities Report and Tabulated Summary

**LOWER SILVER CREEK
INNOVATIVE ASSESSMENT (IA)
FIELD ACTIVITIES REPORT(S)**

Introduction

The Utah Department of Environmental Quality (DEQ) Division of Environmental Response and Remediation (DERR) visited the Lower Silver Creek IA site area on eight (8) days to complete sampling work under the Innovative Assessment Work Plan outlined for Lower Silver Creek. The scope of the IA is to evaluate the presence of heavy metals associated with the processing of mine ores. Photographs of the sampling and site area are attached within the Field Activities Report as well as tables listing the details of the sampling activities.

Sampling November 2, 2001

The surface water and sediment sampling of Silver Creek was performed on Friday, November 2, 2001. Ann M. Tillia, Alan V. Jones, Michael Zucker of DERR and John Whitehead of Utah Division of Water Quality were present. A safety meeting was conducted by Ann Tillia prior to the sampling activities on November 2, 2001.

Within the site area, Silver Creek meanders for more than 12 miles between State Route U-248 and Wanship. Sampling commenced in Wanship at the confluence of Silver Creek and the Weber River, which is the northern extent of the site area. The last sample was collected near the State Route U-248 north of Richardson Flat in the southern extent of the site area.

Surface water and sediment samples were collected at 22 sample locations. In addition, three opportunity surface water and sediment sample locations, and one opportunity soil sample location were selected. At two sample locations, split samples were collected by Park City. The collection of temperature and pH data at each sample location and specific sample activities are included in the attached tabulated summary.

All of the samples were stored on ice and submitted to the State of Utah Division of Epidemiology and Laboratory Services in Salt Lake City on Monday, November 5, 2001. A surface water sample was submitted to the laboratory as a blind duplicate as an external check.

Sampling November 6, 8, 9, 13, 14, 15, and 19, 2001

The X-Ray Fluorescence (XRF) screening data collection, soil sample collection, and opportunity surface water and sediment sample collection occurred on seven separate days within the meadow and southern portion of the site area from Atkinson south to State Route U-248. A Health and Safety meeting was held prior to commencing field activities each day. The field crews included Ann M. Tillia, Alan V. Jones, Craig Barnitz, Michael Zucker, and Mohammad Slam, all of DEQ/DERR. The specific crew data is included in the attached tabulated summary of field sampling activities.

All of the samples were stored on ice and submitted to the State of Utah Division of Epidemiology and Laboratory Services in Salt Lake City on Monday, November 20, 2001.

FIELD NOTES

Sampling Date: 2001 November 2.

Field Crew: Ann Tillie, Alan V. Jones, and Michael Zucker of UDEQ/DERR, John Whitehead of UDEQ/DWQ. Present for Split sampling: Jeff Schoenbacher, of Park City Municipal Corporation.

Weather: Sunny, warm and clear.

Sample Location	Odometer	Dissolved Oxygen	Conductivity	pH	Temperature, C	Roll number, Photo number	Time	Notes
SD-76/SW-28 (opportunity)		11.84	1.44	11.48	5.2	1-1	9:00	at confluence w/Weber River
SD-65/SW-25		12.45	1.42	11.42	5.8	none	9:30	In Wanship at bridge and rail trail
SD-64/SW-24		5.25	1.37	11.77	6.2	1-2	9:50	first bridge above Wanship
SD-53/SW-23		12.5	1.34	5.9	8	1-3	10:05	second bridge above Wanship
SD-52/SW-22	44.7	12.2	1.35	7.06	5.6	1-4, 1-5	10:15	Photo 4: deep creek; narrow. Photo 5: horses in creek.
SD-51/SW-21	45.2	12.3	1.65	5.6	5.8	1-6, 1-7	10:30	Photo 6: sample site is in Silver Creek, upstream from the confluence with Alexander Canyon. Photo 7: the confluence, Alexander Canyon and Silver Creek
SD-77/SW-29 (opportunity)	45.2					1-8, 1-9	10:45	Sample site is near SD-51/SW-21. Photo 8: view of Silver Creek above confluence with Alexander Canyon. Photo 9: sample site, above confluence, in Alexander Canyon.
SD-50/SW-20	45.8	12.58	12.6(7)	5.8	6.3	1-10	10:55	above a beaver dam, creek reach is very straight
SD-49/SW-19	46.3	12.07	1.6	6.9	6.2	1-11	11:10	creek under I-80 overpass, photo taken of samples on a rock.
SW-27 (duplicate of SW-19)	46.3					none	11:20	under I-80 overpass (same site as SD-49/SW-19)
SD-48/SW-18	46.8	12.4	1.55	8.18	6.9	1-12, 1-13	11:30	I-80 on both sides of creek.
SD-47/SW-17	47.3	12.08	1.5	8.6	7.2	1-14	11:47	Photo of samples on rock
SD-46/SW-16	47.8	11	1.54	8.9	7.6	1-15	11:55	sample site is north of ranch exit. Photo: on left bank, cloudy water is due to disturbance of sediment during sampling
SD-45/SW-15	48.3	11.11	1.6	8.8	8.3	none	12:05	south of ranch, between I-80 lanes
SD-44/SW-14	48.8	11.16	1.5	5.5	8.5	2-1, 2-2	12:15	Photo 1: concrete material. Photo 2: Rail Trail between I-80 lanes.
SD-43/SW-13	49.3	10.2	1.5	8.7	8.8	2-3	12:25	Photo: near Rail Trail marker #8. Sample on the bank of Silver Creek.
SD-42/SW-12	49.8	9.69	1.6	5.3	9.9	2-4, 2-5	12:35	At the site observed fish, rainbow trout. Photo 4: sample on a grassy bank. Photo 5: overview of sample site, creek between I-80 lanes.
SD-41/SW-11	50.3	9.4	1.6	8.2	11	2-6, 2-7, 2-8	12:45	Photo 6: floodplain to north. Photo 7: floodplain to north. Photo 8: sample, creek bottom with lots of fines.
SS-78 (opportunity)	50.4					2-9	12:50	Sample site is very close to XRF283 on a large grassless mound on the west bank of creek adjacent to Rail Trail Marker #7, and a rocky outcrop. The reach of Silver Creek north of the site has two terraces. This site is immediately upstream from sample site SD-41/SW-11.
SD-79/SW-30 (opportunity)		7.9	1.7	8	14.1	2-10, 2-11	13:50	sample collected below treatment plant next to road at bend in creek north of fence, green banks. Photo 10: view south from Pace family historical homestead site (now the site of the service road and I-80). Photo 11: sample site.
SD-40/SW-10	50.6	9.2	1.7	8.2	11.4	2-12, 2-13	14:05	Photo 12: sample site in center of meadow adjacent to water treatment plant, I-80 in background, Pace Farm on Right, creek has a grassy bottom w/fine sediment. Photo 13: overview of photo 12, terraced banks, ducks in creek as we approach sample site.
SD-39/SW-09 (Park City split)		11.5	1.69	8.4	6.7	2-14	14:30	entranced ditch, cow-grass, small gravel on creek bottom. Photo: Pace farm and I-80 in background.
SD-38/SW-08 (Park City split)		10.2	1.8	8.8	7.9	2-15	15:10	grassy narrow channel, terraced stream, just north of grassless mounds on east side of creek, across from storage (?) facility, and south of sheriff's complex.
SD-37/SW-07		11.03	1.7	8.8 on side and 5.7 from the in current	7.3	2-16, 2-17	15:35	Photo 16: overview to North, #17: sample site east of shooting range, approximately 20' north is hummocky topography.
SD-33/SW-03		10.75	1.2	6.9	8.3	2-18	16:05	Pace-Homer Ditch. Small gravel in ditch bottom. No flow in creek. The Giltmore property has standing water in the field (& cattle). Photo: view to NW.
SD-32/SW-02		10.56	1.2	6.5	8.3	2-19, 2-20	16:15	Photo 19: overview of Homer Spring to the east of the Rail Trail. Photo 20: sample site (to the right of Photo 19); the site is upstream from the point with Homer Spring emerges with the Pace-Homer Ditch/Silver Creek; medium-size gravel in creek bottom.
SD-31/SW-01		10.1	1.14	8.8	8.5	2-21	16:30	at Rail Trail gate near U-248 hwy.

UDEQ/DERR Lower Silver Creek 1A

FIELD NOTES

Sampling Dates: 2001 November 6,8,9,13,14,15,19.

11/6/2002: Field Crew: Alan V. Jones and Craig Barnitz. Arrive 9:30, sunny, low clouds, expected high of 50.

Time	XRF screening number	Laboratory Sample Number	Roll number photo number	Notes
10:35	66	SS-56	2-22	NG, sample near fence and rail trail and south of Pace farm building, ducks across from creek. Photo of creek at sample site, view SW of water treatment plant in background.
	67			just south of water in meadow, lirs (blue figs) west near upland.
	68			GPS data only.
	69			GPS data only.
	70			NG, soil sandy and gray, site west of creek near RT. Also GPS the Pace Farm Spring on west side of meadow, possibly a second spring SE of first spring. Spring area is grassy and saturated maybe 14" down.
	71			-30' east of creek, on near of upland.
11:35	72	SS-57	2-23, 2-24	Photo 23, 24 (overlapping views): View to SW of water treatment plant/mound/corral/creek.
	73			near road in field with cows and a bull.
				NG, near dirt road north of Water treatment plant. Photo 25: view to north and Pace Farm, hummocky ground in foreground. Met with Standley Pace and his son Robert. Stanley says tailings are 5' deep and the "wire grass has roots several feet deep (very tough), the cows don't like to eat it and rarely do, some tailings on uplands but mostly on low meadow, and in 1940's creek was milky-white from the tailings ("see XRF78).
12:20	74		2-25	NG, terraces along creek. Photo: Pace farm in the background.
	75		3-1	NG, east of creek.
	76			in terrace in center of meadow. Photo 2: view to North of stream terraces and farm.
	77		3-2	NG, halfway between creek & fence/rail trail. Photo 3: close-up of creek. Photo 4: close-up of exposed terrace & embankment, the top covering of the soil is a thin veneer of white soil, and the dark streak shows the underlying soil color ("see note on XRF74).
	78		3-3, 3-4	#5. Rail trail to north/black dirt/ditch on east side of rail trail.
	79		3-5	XRF #80 stopped before it was finished, so did #81. Photo 6: moist soil in otherwise dry depression, 18" deep.
	80, 81		3-6	sample in grassy terrace near creek, below dirt road -30'.
13:55	82			Photo: water treatment plant and creek in bkg. To the south is a pond with ducks and fish jumping.
14:05	83	SS-58	3-7	East & downstream of the water treatment plant and west of 2 ponds.
	84			NG, upstream of water treatment plant.
	85			NG, sandy. West side of meadow. Photo 8: sandy stretch to the south, sheriff's complex in the background.
	86		3-8	NG, sandy. Directly west of old school house.
	87			two sites 3' apart. XRF89 from an existing 12" hole. Photo 9: XRF of excavated soil from hole.
	88, 89		3-9	NG, east of sandy patches, in center of meadow and east of water treatment plant.
	90			NG, on east terrace of creek, -20' west of fence, to west is a gravelly deposit. Photo 10: close up in sandy soil and wire grass.
	91		3-10	
SUBTOTAL	25	3	14	

11/8/2001: Field Crew: Alan V. Jones and Craig Bamitz. Arrive 8:30, sunny, low clouds, frost, expected day high temperature of 60 in SLC.

Time	XRF screening number	Laboratory Sample Number	Roll number photo number	Notes
	93-99			ND, start up.
9:30	94			sample in grassy upland near rail trail, north of old school building.
	95		3-11	the sample site was on the north side of the school house. Photo: to North, Rail Trail to the right, old remains of school house on the left
9:45	96			on north end of hill SE of the school house.
	97		3-12	on top of hill next to ditch, grass is short from the cattle grazing, in the low areas the wire grass is long. Photo: close up.
	98			ND (4 seconds).
10:15	99	SS-58		Dwayne Pace's son stopped by in field in a white car, no report
10:30	100			ND, XRF battery low, changed out.
10:45	101			under power line, on hill, slightly downslope.
	102			GPS data only.
11:30	103	SS-60		SW of ditch, North of old mill site. Arsenic +100 ppm.
11:00	104			North of old mill site.
11:10	105			NW of old mill site ~50 yds.
	(none)			Note: Dwayne Pace stopped to talk by the farm building adjacent to Promontory Rd (the old mill site). Reports: school house remains are north of us on uplands, and remains of a pig shed are south near the spring, the spring use to be used in the mill operations. The COE required to replace like-in-kind in exchange for building Promontory Rd (2 acres of road, 4 acres of wetlands), so they tried that down slope of the old mill site, but the many trees planted died (frogs were introduced, gone now).
12:12	106		3-13	The sample site was on a gravelly mound north of Promontory Road and west of the mitigated wetland. Photo: to SE of the sample site, the mitigated wetland is beyond the fence to the hill in the background. The Pace farm building on the hill in the background was the site of the historical 4M Mill.
	107			GPS data only.
12:30	108		3-14	hummocky ground, halfway between fence and Silver Creek. Photo: close up.
	109			on elongated mound trending N-S, west of fence line, dry drainage east of site.
12:50	110			in grassy (not wire grass) and hummocky ground, dry.
	111, 112			XRF 111: no data. XRF 112: grassy hummocky.
	113			GPS data only.
14:30	114			west of Silver Creek, old school house to NE.
14:45	115			NG, sandy, wire grass, ~30' from west fence line, dry.
14:50	116			GPS data only.
	117			NG, white sand, west ~20' of creek in terrace, sample depth 4".
	118			NG, sandy, wire grass area, east of creek, sample depth 3".
	119			NG, sandy, on east bank of creek, creek is 4' deep 8' wide, fish 4", sample depth 5".
15:35	120			site north of pole line & east of creek, Hg @ 32ppm, sample depth 3".
15:45	121			NG, sandy, south of XRF#120 about 5', sample depth 5".
	122		3-15	NG, sandy, east side of creek on terrace, sample depth 3". Photo: close up.
	124, 125 (same GPS as 123)			ND
16:00	124		3-16	NG, X124 in yellow/red sand, east of creek on terrace. Photo: close up. X125 in sand with red circular pattern around X124.
	126			NG, sandy, on berm trending N-S, sample depth 4".
	127			NG, sandy, on berm trending N-S.
	128			in wire grass, middle of meadow, sample depth 2".
	129			NG, sandy, sample depth 4".
17:00	130			east side of creek ~40' from upland, on hummocky gray-white soil.
SUBTOTAL	31	2	8	

11/9/2001: Field Crew: Alan V. Jones and Craig Bamitz. Arrive 8:30

Time	XRF screening number	Laboratory Sample Number	Roll number photo number	Notes
	434			ND, start up.
9:00	132		3-17	SE of old mill site, on hummocky upland. Photo 17: view to north on the upland, sample site in the foreground, old mill site in background. Promontory Road is between the sample truck and the farm building (the historical 4M site).
	133	SW-06, SS-61	3-18, 3-19	In grass (not wire grass) SW from spring. SS taken just below spring, depth 4 inches. Mist on the water. Sample site is at the spring that was used for 4M processing. Photo 18: to north, Photo 19: of samples.
	134		3-20	Sample site is east of old pig shed on crest of upland slope, near a possible site of a spring/seep. Photo 20: view to west with the pig shed in the foreground, Sheriff's facility in the background, and the low wetland in the middle ground.
	135			Sample in a flat upland site near a blue barrel, which was possibly used to hold grain to feed the cattle. The surrounding soil is dark and gravelly. Rail trail ~100 feet to east. Arsenic 100ppm.
	136			Sample in animal hole, surrounding area has small sage and gravelly soil.
10:00	137			In dirt pile, in upland east of south side of sheriff's facility.
	138			In upland east of fence line, Rail trail 40' east.
	139			NG, on berm, a pond to west, either side of berm in tall non-wire grass & hummocky.
10:45	140	SS-62	3-21	NG, on north end of a berm extending under a fence line marking F. Gilmore property. Dirt roads to west and north around a pond. Low land the grass is tall, saturated soil, hummocky.
11:55	141		3-22	Soil sample on material excavated from an existing hole, near creek, dirt road, and bridge. Silver Creek has a cobble bottom. Photo of west side of meadow south of sheriff's complex.
	142			NG, yellow/clayish soil, east of creek (green color), tall wire grass in area.
	143			NG, gray & clayey soil, in dry pool east of berm trending N-S.
	144		3-23	NG, on berm, east is wet hummocky ground & red soil. Photo 23: close up of creek.
	145		3-24, 3-25	on mound 10 feet west of the creek. Photo 24: close up of standing water between hummocky clumps. Photo 25: XRF site with creek and storage facility in background.
	146		4-1	in a depression. Photo of site to NE with Sheriff's facility behind the photographer.
12:05	147		4-2	on side of mound (see photo), to east are small hummocky grass clumps within a saturated area adjacent to the creek. Ground partially frozen. Creek has a green color, where it's not grassy it's gravelly/some cobbles. Photo to NE, Pace Farm building (Big Four site) in background.
	148			NG, sandy/clayey. Surrounding area is wire grass.
	149			NG, end of berm in center of meadow, 20' SW of a pipe.
	150			Sandy red soil, grassy (not wire grass), sample 5.5" deep.
	151			NG, sandy & gravelly color. Creek to east 40'. Creek is grassy, gravelly/some cobbles.
12:50	149, 153	SS-63	4-3	NG, sandy, east of creek, north of creek channel. Two XRF sites, same location. Photo: Promontory Road to north (left and center, see black plastic along road embankment), Pace farm building (historical 4M site) in the background.
	154			No sample data. Note: GPS of the property corner of F. Gilmore and Rail Trail, on the fence line.
14:10	155			upland, cow grazing area, short grass, black soil w/some gravel. (XRF battery changed out).
	156			sample area consists of black soil w/some gravel, sample depth 4 inches.
	157			sample area consists of black soil w/some gravel, sample depth 4 inches.
	158			sample area consists of black soil w/some gravel, sample depth 4 inches.
	159			grassy is thick (not wire grass), in dry drainage, a dip in the upland area.
	160			on upland.
	(none)			Note: Lowell Pace is walking the field with red spray paint, he is painting over blue X-spots. The Pace family has apparently hired a private contractor to sample the area.
15:00	161	SS-64	4-4	on the east side in a low E-W drainage channel. Photo: Rail Trail in background, a low area, partially buried culvert.
	162			grass is ~2 feet high (not wire grass). Saturated soil. Lots of cow patties.
	163			On the Rail Trail along the fence/property line. Grassy, some gravel, black soil.
	164 (no GPS data)			NG, dry pool, sample depth 4".
	165 (no GPS data)			Note: Hill side to east has distinct vegetation line, cattle graze to the south on the greener side of fence. Standing water between clumps of tall grass partially chewed down by the cattle.
15:45	166	SS-65	4-5, 4-6	NG, gravelly soil, wire grass surrounding non-vegetated sample site. Photo 5: view north, Photo 6: "SC 23" flagged sample site and an 8-inch hole, responsible party is unknown.
16:00	167 (no GPS data)		4-7, 4-8	~3 feet north of fence line on east bank of Silver Creek. Photo 7: view to north, Photo 8: view to south and Florence Gilmore's property, creek in lower right corner of photo, creek is deep & wide, grass is tall.
	168 (no GPS data)			apparently a cattle-grazed area.
SUBTOTAL	36	6	17	

11/13/2001: Field Crew: Micheal Zucker and Muhammad Siam. Arrive 9:00. Weather: Cloudy, 50 degrees.

Time	XRF screening number	Laboratory Sample Number	Roll number photo number	Notes
	169			NO, start up.
9:15	170		4-9, 4-10	NG, grass is ~2 feet high, several cows nearby, at north end of Gilmore property, irrigation water in meadow (flooded). Photo 9: view to NW, trailers in background. Photo 10: close up of sample/XRF. Sample site surrounded by wire grass.
	171			NG, on small mound, 2 feet diameter, sample site surrounded by wire grass.
9:35	172			NG, hummocky ground, site is north of bend in creek, sample site surrounded by wire grass.
10:00	173	SS-66	4-11	NG, fence by water hole, possibly a channel of creek, sample site surrounded by wire grass. Photo of view to north, cows in background, creek in foreground.
	174			NG, hummocky ground, sample site surrounded by wire grass.
10:10	175			NG, on side of mound excavated out, XRF is ~2' down side of mound, sample site surrounded by wire grass.
	176			NG, hummocky ground, sample from side of a mound, surrounded by wire grass.
	177			by fence.
	178			near XRF#177, on a cow patty.
	179			in a depression, 3 feet below surrounding area, cobbles & gravel in depression, grass roots are observed to extend 3 feet (wire grass?).
	180			NG, adjacent to ditch down from Rail Trail, in wire grass area.
	181 (taken at depth)			*on clump that was possibly excavated from the ditch (ditch 1.5 feet deep, grass & lots of fines, no wire grass)
	182			in shallow dry ditch with cobbles in the bottom and cattle-grazed grass between upland and bottom.
11:15	183			upgradient from fence, ditch on south form irrigation, sage brush on upland.
	184			on upland. Grass is cattle-grazed.
	185			between upland and bottom land, mix of wire grass & cattle-grazed grass, on black soil, sample on soil from an animal hole, several cobbles scattered about.
	186			upland, sample at depth of 2.5 inches, cattle-grazed grass area.
	187			on berm, wire grass to west and cattle-grazed grass to east.
	188			on spur.
	189			upland.
12:10	190	SS-67	4-12	Sample on upland east side of meadow, near Rail Trail. Photo: view to west and the Olympic Trailers.
13:10	191			(GPS, "F.G. SE post") on Rail Trail in black soil, site is across from F Gilmore property line and fence post.
	192			Bottom of turned over grass clump, approx. depth of 4 inches, site is along fence line which curves to the NW, mixed grass-mostly cattle-grazed grass.
	193			same location as 192
	194			on N-S trending berm in center of bottom land, surrounded by wire grass.
	195		4-13	east side of dry channel, ~50 feet from fence line, diverted water from creek? Because the Pace-Homer ditch is carrying a lot of water to irrigate stock on east side. Several mounds south of site, lower to the north.
	196			on western edge of site, in sage & hummocky area.
	197			sample in a depression (depth 2 feet) & below a gravelly berm, puddle to the west.
	198			on top of gravelly berm in XRF#197
	199			on berm, sandy dry channel to the west.
	200			No Data/ switched batteries
14:40	201	SS-68	4-14	on top largest mound.
	202			on berm.
15:08	203			in wire grass.
SUBTOTAL	33	3	8	

11/14/2001: Field Crew: Alan V. Jones and Craig Barnitz Arrive 9:50. Weather: Heavy morning frost/low clouds, partly cloudy, ~40 degrees

Time	XRF screening num	Laboratory Sample Number	Roll number photo number	Notes
	204-205-206			ND, start up.
	207,208			Lots of cows in area. Sample in dry ditch (depth 2 feet), soil black, surrounded by wire grass.
10:04	209			west side of a dry ditch, sample from soil excavated from the ditch, grassy (cattle-grazed grass & wire grass), sample depth 2 inches.
	210			in mossy grass area (not wire grass).
10:20	211	SS-69	4-15	East side of meadow, wire grass is cattle-grazed grass, a lot of manure, sample depth 6" from the flip side of a wedge of grass. Photo: tree in background.
	212			North side of fence line, same area as XRF#211.
	213			on large mound, fence line runs over the top of it.
	214			NE of tree in dry ditch, grassy, cow patties.
	215			NG, small mound to the east, sample site surrounded by wire grass & cow patties.
	216			cattle-grazed grass and wire grass in the area, sample on soil from an existing hole.
11:08	217	SS-70		NG, surrounded by wire grass.
	218			cattle-grazed grass area.
	219			upland area east of a dirt road and between sage brush and lowlands, a second road is grassed over and leads into the lowlands. Sampled near a culvert, on a berm created from excavation of a ditch.
	220			Grassy, cow patties, in an apparent excavation site (soil from large hole deposited to NW). Fence line is east of site.
	221			same as XRF 220.
	222			in upland, wire grass.
	223			NG, on berm, sandy, 5 feet from a fence line.
	224			in a dry channel east of a berm, gravel and cobbles.
	225			on high ground between dry channels. On edge of ditch are 3 foot leafless bushes.
	226			Sample in dry lowlands, cattle-grazed grass. A dry channel goes under fence line to the west. A few puddles in dry channel are covered with a thin layer of ice.
13:00	227			NG, west of the Homer-Pace Ditch.
	228			West of the Homer-Pace Ditch, near leafless bushes.
	229			West of the Homer-Pace Ditch, on clump of dirt probably from the excavation of the ditch.
	230			in a small dry ditch in the uplands surrounded by cattle-grazed grass and cow patties.
	231			(same as XRF230 site, but not in a ditch).
	232			immediately west of a small dry ditch.
	233			(same as XRF 232 site)
	234			Sample west of a dry ditch on a berm (probably excavated from the ditch).
	235			(same as XRF 234)
	236			Sample on side of a grassy mound (possibly excavated from a nearby watering hole, now dry). Photo 18: In the deepest part of the depression is cattle-grazed grass, the depression is surrounded by wire grass.
14:30	237	SS-71		NG, sample on a gravelly mound west of fence line, west of a dry depression with cattle-grazed grass in it.
	238			in a ditch in sage brush area.
	239			ND
	240			On grassy/sage brush, and gravelly mound.
	241			Sample depth 3 inches, site near a fence line.
	242			On a grassy mound, pieces of wood scattered about, site is east of a fence line.
	243			sample between mounds.
15:30	244	SS-72		on large mound, black soil.
	245			Between mounds, cattle-grazed grass area.
	246			site is near a small mound. Surrounding area consists of several watering holes, which are now dry and filled with cattle-grazed grass.
16:04	247			on mound near a dry ditch.
SUBTOTAL	40	4	1	

11/15/2001: Field Crew: Alan V. Jones. Arrive 9:17. Weather: Sunny, low clouds, heavy morning frost, -40 degrees.

Time	XRF screening number	Laboratory Sample Number	Roll number - photo number	Notes
	248			NG, start up.
9:29	249			on a mound west of Homer Spring.
	250			sample in black soil on mound north of Homer Spring. Surrounding area has mounds, wire grass, and some bare spots with no grass.
	251			in a dry ditch (2.5 feet deep) on west side of Rail Trail, cow patties in ditch. Snake grass and Mullen on the edge of ditch.
	252			Site is between mounds and Rail Trail in a cattle-grazed grass area, also observe some wire grass.
	253			site is east of a depression and a mound
	254			In a depression (immediately east of XRF253).
	255			NG
10:20	256	SS-73	16	on a mound.
	257			NG, surrounded by wire grass.
	258			on south side of a ditch, near a culvert, standing water/saturated ground.
	259			NG and gravelly, dry ditch to the west, some cattle-grazed grass and leafless bushes, cow patties.
	260			NG, yellow sandy soil, surrounded by wire grass, near a depression.
	261			NG, gray-white sandy to gravelly soil, sample on berm. (same GPS site as , 262 and 263)
	262			2 feet from #261 in brown-red soil. (same GPS site as #261)
	263			2 feet from #261 in red soil. (same GPS site as #261)
	264			NG, sandy, sample on a berm (N-S trending).
	265			in a ditch, a little water in the center of ditch, sample site on a clump collapsed off the side of the ditch, black organic soil, cattle-grazed grass and wire grass near the site.
11:41	266			NG, in a dry depression, both cattle-grazed grass and wire grass in the site area.
	267			NG, gray sandy soil, east of the rail trail.
	268			on west bank of the Pace-Homer Ditch.
	269			NG, silty-sandy yellowish soil. East bank of Pace-Homer Ditch
	270			west bank of Pace-Homer Ditch.
13:10	271	SS-74	17	NG, sandy mound near Geneva Plant, surrounded by tall wire grass. Photo: note bare spot (no vegetation) on hill slope in background of photo.
	272			in a now dry marshy area, tall grass, adjacent to bridge.
	273			NG, west Bank of Rail Trail, yellow and black silty/sandy soil with a gravel size grains, possible Road material.
	274			East side of Rail Trail, west of creek channel. Water level on east side of bridge is high, water west side of bridge is low.
	275		18	NG, sandy, wire grass. Photo: fence line and hill slope in background.
	276			on grassy clump next to a dry channel, west of Rail Trail.
	277			on the east side of a fence line near a ditch (high water), banks of ditch appear to be recently excavated, sampled on excavated soil, gravelly-black soil.
	278			Under power line, on old gravel road, sparse vegetation.
14:10	279	SS-75		on a large mound, near Hwy U-248.
SUBTOTAL	31	3	3	

11/19/2001: Field Crew: Alan V. Jones. Arrive 9:30. Weather: morning frost, clear and sunny, ~40 degrees.

Time	XRF screening nu	Laboratory Sample Number	Roll number - photo number	Notes
	280			ND, start up.
9:46	281			in terrace meadow north of Pace farm, sample site next to creek, west bank.
	282			same as 281.
	283	(near SS-78)		across from Rock out crop and west of creek.
	284			NG, center of meadow.
	285			NG, west side of creek.
	286			center of meadow, across from water treatment plant.
	287			NG, on low mound, east of Geneva Plant and west of Pace-Homer Ditch.
	288			south side of power line, Pace-Homer and secondary ditch both have water flowing.
12:50	289, 290			west bank of stream, north of side of cement culvert under U-248. (analyzed for both XRF analyte sets)
	291			ND, start up.
	292, 293	SD-77		Conducted XRF analysis of dried sediment sample from the mouth of Alexander Canyon, due to sample jar breaking in transport. (analyzed for both XRF analyte sets)
SUBTOTAL	12	1	0	
GRAND TOTAL*	208	22	47	

ND = No Data

NG = No Grass/vegetation in sample area.

* Grand Total of XRF data site (ND sites are excluded).

APPENDIX B

Log of Photographs



Photo 1-1. Date: 11/02/01 Sample: SD-76/SW-28.
View: Sample site above the confluence of Silver Creek with the Weber River. The I-80 is in the background.



Photo 1-3. Date: 11/02/01 Sample: SD-53/SW-23
View: Samples shown in center of creek near the second bridge above Wanship.

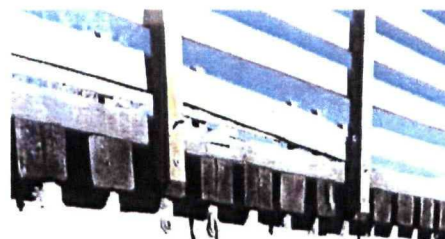


Photo 1-2
Date: 11/02/01
Sample: SD-54/SW-24
View: Sample on a bridge post of the first bridge of the Rail Trail above Wanship.



▼ Photo 1-4. Date: 11/02/01.
Sample: SD-52/SW-22.
View: Samples shown along bank of Silver Creek (see arrow). Field personnel in the background is doing stream flow measurements.





Photo 1-5. Date: 11/02/01
View: NE with horses in creek downstream of sample site (Sample: SD-52/SW-22) shown in Photo 1-4.



Photo: 1-7
Date: 11/02/01
View: Alexander Canyon in background and Silver Creek in the foreground. Sample site (SD-51/SW-21) is left (upstream) of the photo.



Photo 1-6
Date: 11/02/01
View: Samples on the bank (see arrow) of Silver Creek upstream from the Alexander Canyon confluence.
Sample: SD-51/SW-21

▼ Photo 1-8. Date: 11/02/01
View: Silver Creek upstream of Alexander Canyon, which is to the right of the photo.





Photo 1-9. Date: 11/02/01. Sample: SD-77/SW-29.
View: Sample (see arrow) from Alexander Canyon.

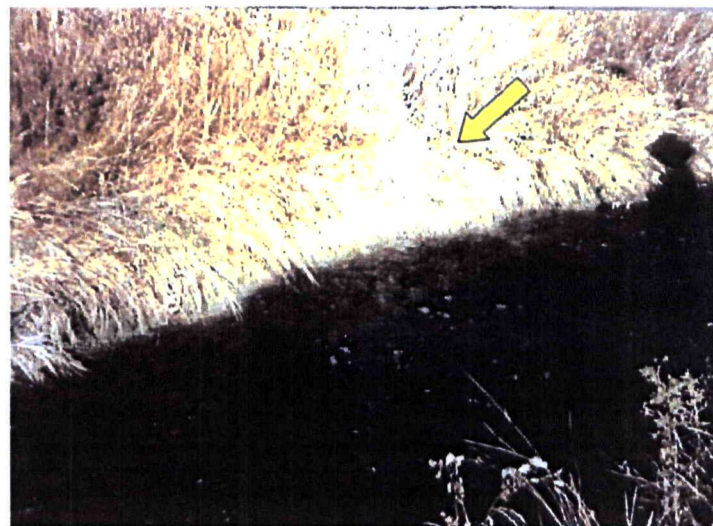


Photo 1-10. Date: 11/01/01 Sample: SD-50/SW20.
View: of samples on the bank (see arrow) and the sample site located above a beaver dam along a straight reach of Silver Creek.



Photo 1-11.
Date: 11/02/01
Sample: SD-49/SW-19, SW-27.
View: to the north and samples collected in Silver Creek near an I-80 overpass (above Silver Creek).



Photo 1-12.
Date: 11/02/01.
Sample: SD-48/SW-18
View: Samples on far bank (see arrow) of Silver Creek. An overview of sample site is shown in Photo 1-13.

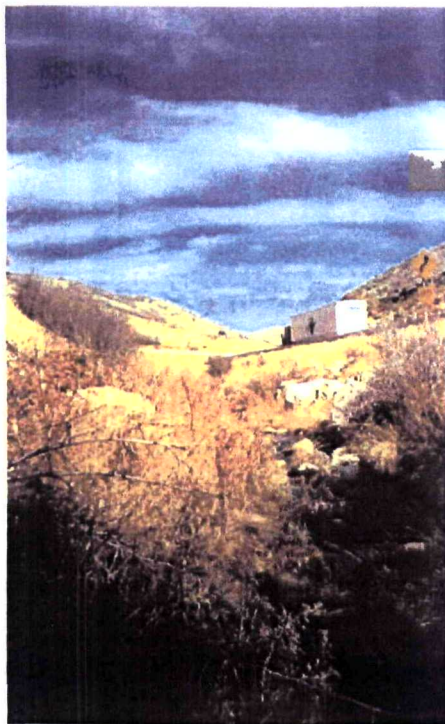


Photo 1-13.
Date: 11/02/01
View: An overview to the north of sample site (SD-48/SW-18) shown in Photo 1-12. Silver Creek is between the I-80 lanes.



Photo 1-14.
Date: 11/02/01
Sample: SD-47/SW-17
View: North along Silver Creek, samples on a rock near the creek.

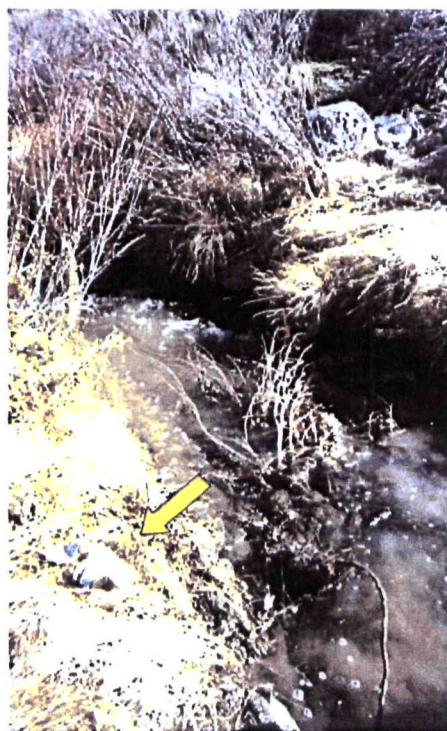


Photo 1-15.
Date: 11/02/01
Sample: SD-46/SW16
View: Samples collected (see arrow) at a site north of the ranch exit. The cloudy water is due to sediment disturbed while sampling.

Photo 2-1.
Date: 11/02/01
Sample: SD-44/SW-14
View: Sample shown on the bank (see arrow) of Silver Creek near chunks of concrete material.





▲ Photo 2-2.
Date: 11/02/01
View: An overview to the north
of sample site SD-44/SW-14
(Photo 2-1).



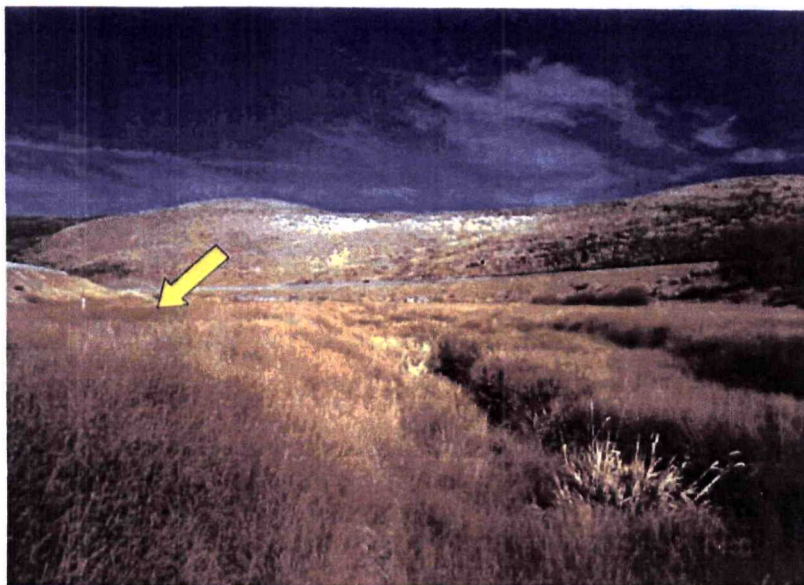
Photo 2-4.
Date: 11/02/01
Sample: SD-42/SW-12.
View: of the samples (see
arrow) located on the grassy
bank below a barracade for
I-80. Rainbow trout were at
this sample site.



Photo 2-3.
Date: 11/02/01
Sample: SD-43/SW-13.
View: Samples on the bank of Silver Creek
near Rail Trail marker number 8. The
samples collected are located in the tall
grass on the banks of Silver Creek (see
arrow).



▼ Photo 2-5.
Date: 11/02/01.
View: An overview to the north of
sample site SD-42/SW-12 shown in
Photo 2-4.



▲ Photo 2-6.

Date: 11/02/01

View: An overview to the north of sample site SD-41/SW-11 shown in Photo 2-8. Two terraces of Silver Creek are shown on the right side of the photo. Silver Creek lies between the north-bound and south-bound lanes of I-80. The Rail Trail location is indicated by the arrow.



Photo 2-8.

Date: 11/02/01.

Sample: SD-41/SW-11.

View: The sediment in Silver Creek at the sample site is fine grained. The samples are on the grassy bank as indicated by the arrow.

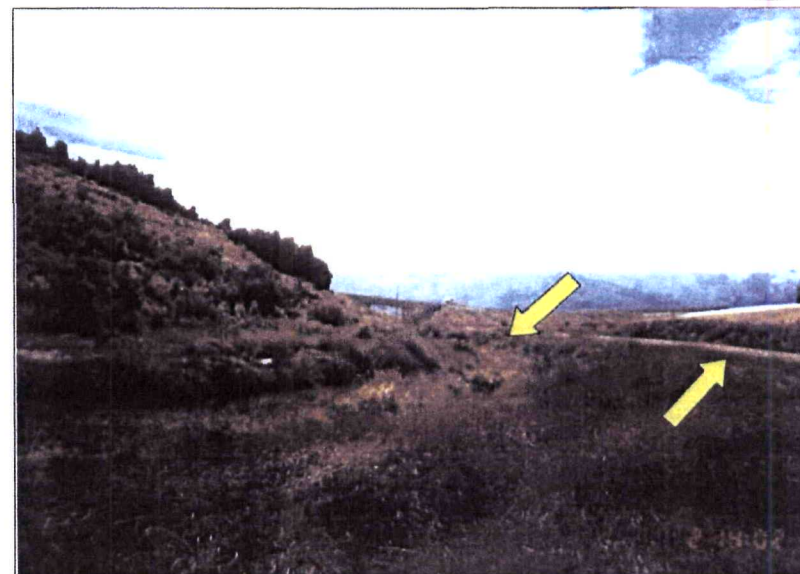


Photo 2-7. Date: 11/02/01. View: An overview to the north. Sample sites SD-41/SW-11 and SS-78 are located at the base of the slope on the left (see arrow). The I-80 overpass is shown in the background. The Rail Trail is on the right (arrow pointing up).



Photo 2-9. Date: 11/02/01. Sample: SS-78.

View: to the north with the sample site is on mounds adjacent to Silver Creek, which is on the right, and the sample site of SD-41/SW-11.



Photo 2-10. Date: 11/02/01. View: to the SE and the southern portion (meadow area) of the LSC Site taken from the service road, which leads to the Pace ranch buildings at Atkinson. The photo was taken from the approximate site of the historical Pace family homestead. The arrow indicates the location of Silver Creek.



Photo 2-12. Date: 11/02/01. Sample: SD-40/SW-10. View: to NW of the sample site. Silver Creek flows through the center of the meadow at this point, I-80 is in the background and the water treatment facility is to the far left of the photo. The arrow indicates the samples collected.



Photo 2-11. Date: 11/02/01. Sample: SD-79/SD-30. View: to the NE of sample site on Silver Creek near the water treatment facility (behind the photographer). The arrow indicated the samples collected.



Photo 2-13. Date 11/02/01. View: over view of photo 12, terraced banks of Silver Creek, ducks were observed in the creek as the sampling crew approached. The lower left corner shows the long grass observed in the creek.



Photo 2-14
Date: 11/02/01.
Sample: SD-39/SW-09.
View: of Silver Creek to the north with the I-80 in the background. At this site the creek bottom is gravelly and the banks are covered with the grass the cattle like to eat.

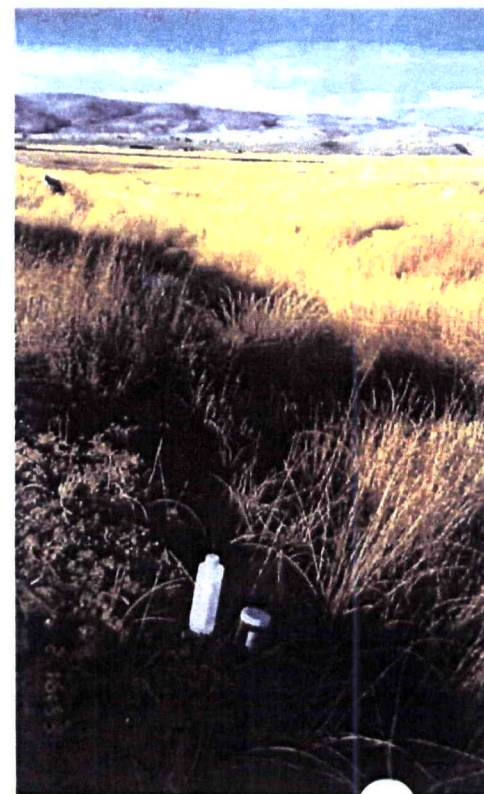


Photo 2-15.
Date: 11/02/01.
Sample: SD-38/SW-08.
View: of Silver Creek to the SW with the Sheriff's facility in the background. The arrow indicates the sample site.



Photo 2-16.
Date: 11/02/01
View: An overview to north of sample site SD-37/SW-07 shown in Photo 2-17.

▼ Photo 2-17. Date: 11/-2/01.
Sample: SD-37/SW-07.
View: Close up of sample site along the banks of Silver Creek within a hummocky area.





▲ Photo 2-18. Date: 11/02/01.
Sample: SD33/SW-03
View: to the NW of the sample site and the Pace-Homer Ditch located east of the Rail Trail.



Photo 2-19.
Date: 11/02/01.
View: to the east of the Homer Spring emerging from the cement wall and flowing straight down to the Pace-Homer Ditch in the foreground, which is near the (SD-32/SW-02) sample site.



Photo 2-20.
Date: 11/02/01.
Sample: SD-32/SW-02.
View: the Pace-Homer Ditch and sample site, which is immediately upstream from Homer Spring (to the right of the Photo 2-19).

▼ Photo 2-21. Date: 11/02/01
Sample: SD-31/SW01
View: sample site is west of the Rail Trail and north of highway U-248.





Photo 2-22. Date: 11/06/01. Sample: XRF66 and SS-56.
View: to SW and water treatment facility in center of photo, the access road to Atkinson (Pace ranch buildings near I-80) is to the right of the photo. Ducks were observed at the sample site.



▲ Photo 2-25. Date: 11/06/01.
Sample: XRF74
View: to north, hummocky mounds covered with wire grass in the foreground, Atkinson and I-80 are in the background.



Photo 2-23 and 2-24. Date: 11/06/01.
Sample: XRF72 and SS-57
View: to SW and the water treatment facility to the left in the background, a corral is in the center background, and a ranch access road is to the right in the background. The sample site is in a grassless spot surrounded by wire grass.



▲ Photo 3-1. Date: 11/06/01.
Sample: XRF 75

View: Sample site on a sandy berm adjacent to Silver Creek, and west of the historical Big Four Mill site. Atkinson is to the north at the top of the photo near I-80. Standley Pace visited the sampling crew at this point and remarked the tailings are 5 feet deep in that area.



▲ Photo 3-2. Date: 11/06/01
Sample: XRF77

View: to the north, sample is on sandy grassless (foreground) terrace adjacent to Silver Creek.



Photo 3-3. Date: 11/06/01.

View: of Silver Creek near sample site (XRF78, shown in Photo 3-4), which is to the right of the photo.



Photo 3-4. Date: 11/06/01.
Sample: XRF 78.

View: close up of terrace embankment showing the surface soil is white and the underlying soil (in the center of the photo) is darker (field book for scale). Standley Pace reports the creek was milky-white in the 1940's.



▲ Photo 3-5. Date: 11/06/01. Sample: XRF79.
View: along the east side of the Rail Trail looking to the north.



Photo: 3-7. Date: 11/06/01.
Sample: XRF83 and SS-58.
View: sample site is surrounded by wire grass and is downstream from the water treatment facility, which is in the background. At this site ducks and fish were observed in the creek.



Photo 3-6. Date: 11/06/01.
Sample: XRF81.
View: sample site within a depressional area with an 18-inch drop below the surrounding surface, sample was moist.

▼ Photo: 3-8. Date: 11/06/01.
Sample: XRF86.
View: south of sandy area surrounded by wire grass, and the Sheriff's facility in the background.





Photo 3-9. Date: 11/06/01.
Sample: XRF88 and XRF89.
View: XRF88 is taken from undisturbed soil and XRF89 is on material apparently excavated from an existing hole that had a depth of one foot. The two sample spots are three inches apart.



Photo 3-10. Date: 11/06/01.
Sample: XRF91
View: of the sample site on a terrace on the east side of Silver Creek in sandy soil surrounded by wire grass located near a fence.

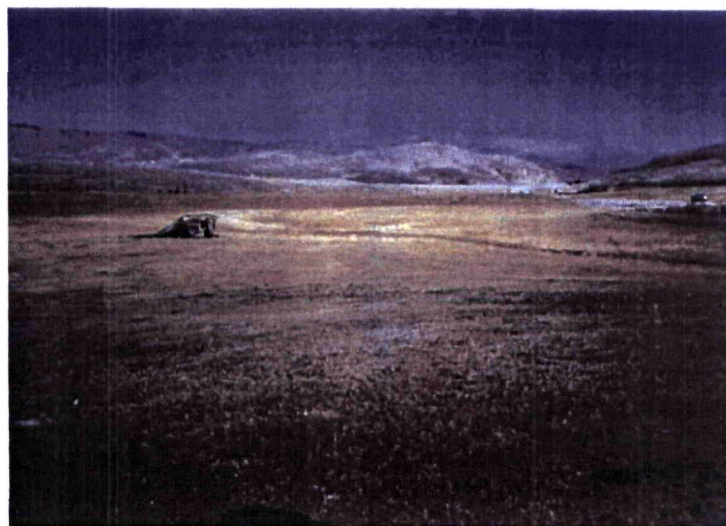


Photo: 3-11. Date: 11/08/01.
Sample: XRF96.
View: from the upland sample site north with the remains of the historical school house (not the original location) left-center, and the Rail Trail to the right. A shallow (wet) ditch runs from the right of the photo past the old school house and down to the center of the meadow. (XRF95 was taken between the ditch and the school house).

▼ Photo 3-12. Date: 11/08/01.
Sample: XRF97.
View: close up of sample site, on the same high ground as shown in Photo 3-11 (site is south of XRF95).





Photo: 3-13. Date: 11/08/01. Sample: XRF106.
View: to SE within the fenced area that is reportedly a proposed mitigated wetland. In the background, on the hill, is a Pace ranch building (adjacent to Promontory Road) and the historical site of the Big Four Mill.



Photo: 3-15. Date: 11/08/01. Sample: XRF122.
View: to the NW at a grassless sample site on a terrace on the east side of Silver Creek, sample depth is three inches.



▲ Photo: 3-14. Date: 11/08/01.
Sample: XRF108.
View: sample site in a hummocky area between a fence line and Silver Creek within a wire grass area.



Photo: 3-16. Date: 11/08/01.
Sample: XRF124 and XRF125.
View: sample site is east of Silver Creek on a terrace. XRF124 is in a yellow/red sandy soil and XRF125 is in the red sandy soil, which formed a circle around XRF124.



Photo: 3-17. Date: 11/09/01. Sample: XRF132.
View: to the north with the Pace farm building along Promontory Road in the background.

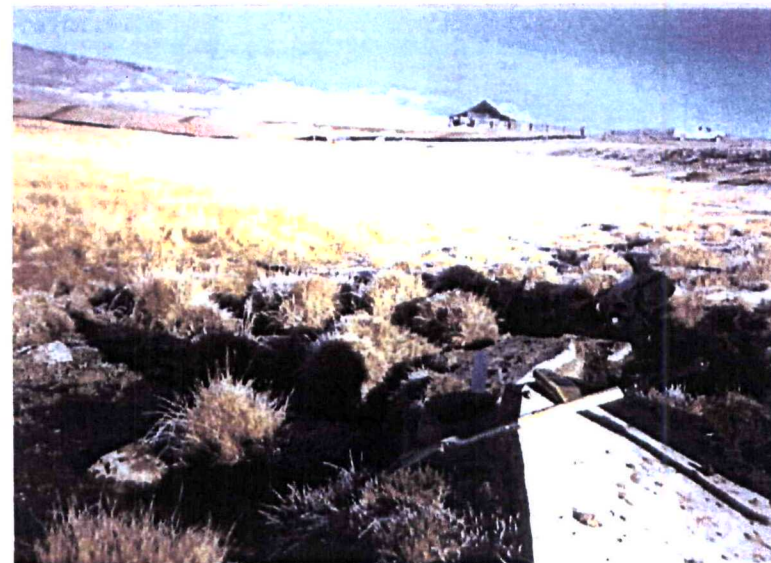


Photo: 3-18. Date: 11/09/01. Sample: XRF133 and SS-61, SW-06.
View: to the north at the spring, which was historically used in the Big Four mill processing. (The Pace farm building is shown in the background.)



Photo: 3-19. Date: 11/09/01. Sample: XRF133 and SS-61
View: close up of the soil and XRF sample site. The surface water sample was taken from the spring to the right of the photo, as shown in Photo3-18.



Photo: 3-20. Date: 11/09/01. Sample: XRF134.
View: to the west of the sample site with an old pig house in the center of the photo and the Sheriff's facility in the background. Near the pig house was moist soil, which may be the result of a seep.



Photo 3-21. Date: 11/09/01. Sample XRF140 and SS-62.
View: to the SW at the property boundary and fenceline (F. Gilmore), the surrounding area has hummocky grass clumps, and saturated soil. Samples were taken from the berm to right of the fence.



Photo: 3-22. Date: 11/09/01. Sample: XRF141.
View: to the SW, samples were taken from the material excavated from an existing hole on the side of a dirt road that crosses over Silver Creek.



Photo: 3-23.. Date: 11/09/01. Sample: XRF144.
View: of Silver Creek showing a cobblesized rocky bottom and a width of three feet. The sample site is to the east of the creek on a sandy grassless berm, and to the east is a saturated hummocky area with red soils.



Photo 3-24. Date: 11/09/01.
View: of standing water in hummocky area near XRF144 and XRF145.



Photo: 3-25. Date: 11/09/01. Sample: XRF145.
View: to the NW and sample site on a mound shown on the left of photo. Silver Creek is in the foreground, and the Sheriff's facility is in the background and to the left.



Photo: 4-2. Date: 11/09/01. Sample: XRF147.
View: to NE with the Pace farm building in the background. The sample site was on the mound on the right side of the photo. In the center of the photo is Silver Creek and a saturated hummocky grassy area between the creek and the mound.



Photo: 4-1. Date: 11/09/01. Samples: XRF146.
View: to the NE and the sample site within a depressional area east of the Sheriff's facility.

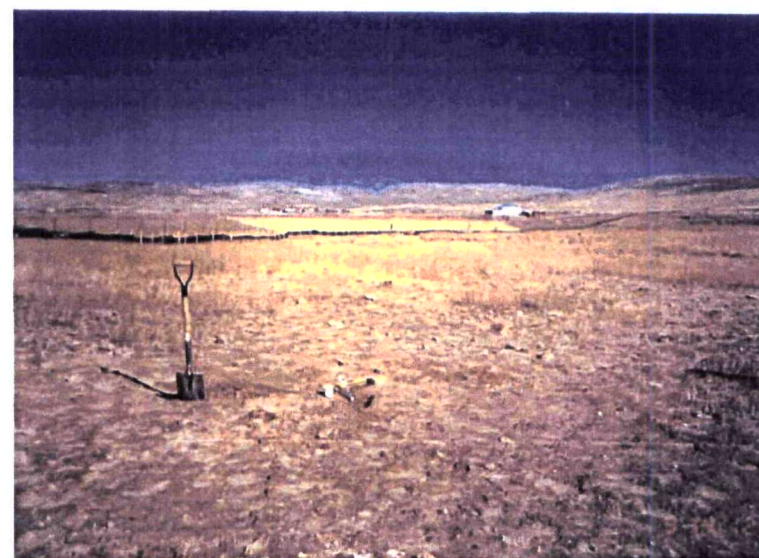


Photo: 4-3. Date: 11/09/01. Sample: XRF153 and SS-63.
View: to the NE with the sandy, grassless sample site in the foreground and Promontory Road in the background.

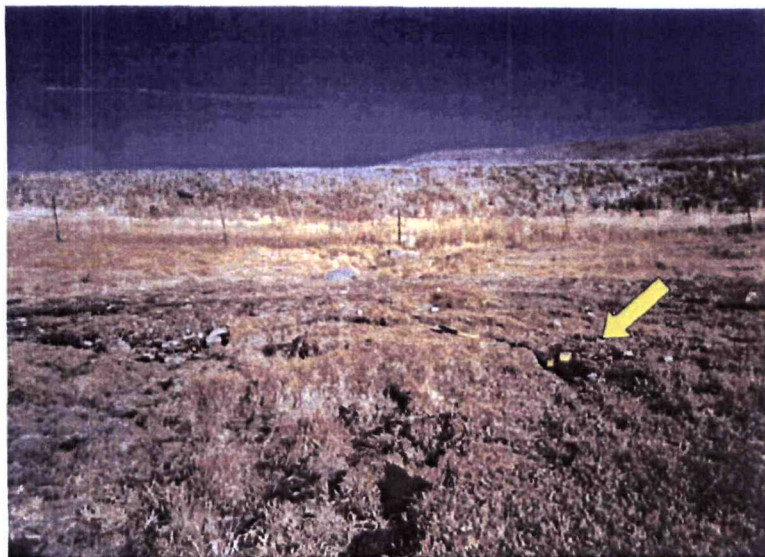


Photo: 4-4. Date: 11/09/01. Sample: XRF164 and SS-64.
View: to the east with the Rail Trail on the embankment in the background, a shallow ditch and partially buried culvert to the left, and the sample site to the right on the upland. The arrow indicates the sample site.



Photo 4-6. Date: 11/09/01.
View: an existing hole flagged "SC-23" located near the XRF166 site.



Photo: 4-5. Date: 11/09/01. Sample: XRF166 and SS-65.
View: to the north of the sandy and grassless sample site, which is surrounded by tall wire grass.



Photo: 4-7. Date: 11/09/01. Sample: XRF167.
View: to the NW with the sample site on the east bank of Silver Creek. At this site Silver Creek (in the shadow area of the photo) is entrenched approximately three feet. The sample site is approximately 30 feet north of a fence line (no GPS data).



Photo: 4-8. Date: 11/09/01.

View: to the south of sample site XRF167 (Photo 4-7). At this site Silver Creek is wide and deep, and the grass is tall. The area beyond the fence was not sampled (F. Gilmore property).



Photo: 4-10. Date: 11/13/01. Sample: XRF 170.

View: close up of sample site. Sample was taken from the bottom side of a wire grass clump (sample depth is 3 inches).



Photo: 4-9. Date: 11/13/01.

View: an overview of the sample site (XRF170) to the NW. The sample site is within tall wire grass, as shown in Photo 4-10. In the right-center of the photo are cattle (the small dark spots).



Photo: 4-11. Date: 11/13/01. Sample: XRF173 and SS-66.

View: to the NW of sample site and adjacent water hole. The soil is sandy and surrounded by wire grass. Beyond the fence, cattle are the small dark spots in the center of the photo.



Photo: 4-12. Date: 11/13/01.
Sample: XRF190 and SS-67.
View: to the W-NW with the Olympic trailers in the background. The sample site is on higher ground on the east side of the meadow (adjacent to the Rail Trail). The sample site area is on gravelly soil and cattle-grazed grass. Cattle are down in the meadow in the upper left side of the photo.



Photo 4-14. Date: 11/13/01. Sample: XRF201 and SS-68.
View: to the north, the samples were taken from the largest mound in the area.



Photo: 4-13. Date: 11/13/01. Sample: XRF195.
View: to the north of the sample site on the located on the west side of a dry channel, the surrounding area is wire grass, but the lowest point in the channel is moist and the grass is not wire grass. The channel is approximately 3 feet lower than the surrounding area.



Phtoo: 4-15. Date: 11/14/01. Sample: XRF211 and SS-69.
View: to SW, sample site is on the east side of the meadow, the sample was taken from the flip side of an overturned grass clump at a depth of six inches.



Photo: 4-16. Date: 11/015/01. Sample: XRF256 and SS-73.
View: to the north, sample was collected from mound in the southern portion.



Photo: 4-17. Date: 11/15/01. Sample: XRF271 and SS-74.
View: of the sample site in a sandy grassless site surrounded by wire grass located between the Geneva plant and the Rail Trail (the sampling truck is on the Rail Trail).



Photo 4-18. Date: 11/15/01.
Sample: XRF275.
View: to SE with the Rail Trail behind the photographer and highway U-248 to the right of the photo.

APPENDIX C

Grant of Access to Property

Lower Silver Creek IA

Property owners who provided a Grant of Access.

Property ownership data provided through the Summit County Recorder's Office, 09/07/01

Serial No.	Tax Notice Year	Acreage	Owner(s)	Book	Page	Section	Township & Range
SS-28-A-X	2000	88.26	Municipal Bldg., Authority of Park City			15	T1S, R4E
SS-44	2001	97.85	Pace, Angus			22	T1S, R4E
			Pace, Ella M.				
			Pace, Gale W.				
			Pace, Kathleen D.				
			Pace, Dwayne M., Trustee				
			Pace, Joan J. Trustee				
SS-49	2000	30	Pace, Angus			23	T1S, R4E
			Pace, Ella M.				
			Pace, Gale W.				
			Pace, Kathleen D.				
			Pace, Dwayne M., Trustee				
			Pace, Joan J. Trustee				
SS-56-A-1	2000	208.47	Gillmore, Edward L.			26	T1S, R4E
SS-56-A	2000	50.61	Gillmor, Nadine Fausett, Trustee (verbal, 11/1/01)	944	247	26	T1S, R4E
SS-64-A	2000	153.79	Gillmor, Nadine Fausett, Trustee (verbal, 11/1/01)	944	247	35	T1S, R4E
SS-65-A	2001	89.01	Burbs, LLC (verbal)	1275	262	35	T1S, R4E
PSS-50		130	Gillmor, Nadine Fausett, Trustee	M33	111	23	T1S, R4E
SS-47		159.28	Gillmor, Nadine Fausett, Trustee	275	353	22	T1S, R4E
SS-51-A		15.34	Pace, Angus	601	370	23	T1S, R4E
SS-29		130.62	Pace, Angus etal	357	773	15	T1S, R4E
				358	118		
				598	307		
SS-29-B-X		11.2	Synderville Basin Water Reclamation District	322	415	15	T1S, R4E
				1379	882		
SS-29-B-X		31.61	Synderville Basin Water Reclamation District	986	373-377	15	T1S, R4E
				357	773		
				385	118		
				598	307		
SS-65-A-5		15.14	R.D.B., LLC	1275	250	35	T1S, R4E
SS-65-A-3-1		4.9	B.V.D. Properties	1146	54	35	T1S, R4E

GRANT OF ACCESS TO PROPERTY

Gabe W. Pace, Kathleen Pace is the owner ("Owner") of record, title holder or authorized agent for the record owner of certain real property located at Section 15, 22, 23, T1S, R4E, Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment and/or water samples,
2. a site inspection and the taking of any necessary photographs,
3. Any other such actions related to the taking of the above samples.

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed between _____ and _____. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least twenty four hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C. A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

- ☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.
- ☐ I waive my right to obtain split samples.

Owner's Signature:

Gabe W. Pace
Kathleen Pace

10/23, 2001
Date

GRANT OF ACCESS TO PROPERTY

_____, is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within
Sections 15, 22, 23, T1S R4E Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples,
2. a site inspection and the taking of photographs,
3. Any other such actions related to the taking of the above samples.

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or early November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

☒ I waive my right to obtain split samples.

Owner's Signature:

Wayne M Pace & Joan J. Pace
Date

Title:

Trustee

Owner's Signature:

Ella M. Pace
Date 10-25-2001

Title:

RECEIVED

OCT 29 2001

GRANT OF ACCESS TO PROPERTY (Pace Property, Lower Silver Creek IA)

Owner's Signature: Swayne M. Pace 10/25/2001
Date

Title: Trustee

Owner's Signature: Joan J. Pace 10-25-2001
Date

Title: Trustee

Owner's Signature: Ella M. Pace 10-25-2001
Date

Title: _____

Owner's Signature: _____
Date

Title: _____

GRANT OF ACCESS TO PROPERTY

Jeff Schenck is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within Park City Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples.
2. a site inspection and the taking of photographs.
3. Any other such actions related to the taking of the above samples.

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or early November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq. (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

☒ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

☐ I waive my right to obtain split samples.

Owner's Signature:

Jeff Schenck

Date

10/29/01

Title:

Environmental Specialist

Owner's Signature:

Date

Title:

STOEL RIVES LLP

A T T O R N E Y S

ONE UTAH CENTER
201 S. MAIN STREET, SUITE 1100
SALT LAKE CITY, UTAH 84111-4904
Phone (801) 328-3131 Fax (801) 578-6999
Internet: www.stoel.com

November 5, 2001

RICHARD C. SKEEN
Direct Dial
(801) 578-6928
email reskeen@stoel.com

Copy sent by Fax Number (801) 536-4242

Ms. Ann M. Tillia
Utah Division of Environmental
Response and Remediation
168 North 1950 West
Salt Lake City, Utah 84114

Re: Grant of Access to Property
Edward L. Gillmor

Dear Ms. Tillia:

Enclosed please find a Grant of Access to Property which has been signed by the Co-Special Administrators of the Estate of Edward L. Gillmor. If you have any questions or need additional information, please let me know.

Respectfully,


Richard C. Skeen

RCS:jh
Enc.

GRANT OF ACCESS TO PROPERTY

Edward L. Gillmor _____ is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within Summit County, Section 26, T1S, R4E, SLBM, Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples.
2. a site inspection and the taking of photographs.
- ~~3. XXXXX Any other such actions related to the taking of the above samples.~~

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or early November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

- ☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

- ☐ I waive my right to obtain split samples.

THE EDWARD L. GILLMOR ESTATE, By:

Owner's Signature:

Edward L. Gillmor 10/31/01
Date

Title:

Co-Special Administrator

Owner's Signature:

Charles F. Gillmor 10/31/01
Date

Title:

Co-Special Administrator

Owner's Signature:

Edward L. Gillmor Jr. 11/1/01
Date

Title:

Co-Special Administrator

GRANT OF ACCESS TO PROPERTY

SBWRD, is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within Snyderville County Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples,
2. a site inspection and the taking of photographs,
3. Any other such actions related to the taking of the above samples.

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NOV 05 2001

DEQ
Environmental Response & Remediation

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or early November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

☒ I waive my right to obtain split samples.

Owner's Signature:

[Signature]

11/1/01
Date

Title:

OPERATIONS MANAGER

Owner's Signature:



**Snyder Basin Water
Reclamation District**

2800 Homestead Road • Park City, Utah 84098

Date

MICHAEL BOYLE
Operations Manager

GRANT OF ACCESS TO PROPERTY

R.D.B., L.L.C., is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within Summit Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples,
2. a site inspection and the taking of photographs,
3. Any other such actions related to the taking of the above samples.

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or early November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

☐ I waive my right to obtain split samples.

Owner's Signature:

R.D.B. LLC
[Signature]

11/7/2001
Date

Title:

Manager

Owner's Signature:

Date

Title:

GRANT OF ACCESS TO PROPERTY

B.V.D., L.L.C., is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within Summit Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples,
2. a site inspection and the taking of photographs,
3. Any other such actions related to the taking of the above samples.

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or early November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

☐ I waive my right to obtain split samples.

Owner's Signature:

B.V.D. Properties L.L.C.
by [Signature]
Manager

11/7/2001

Date

Title:

Owner's Signature:

Date

Title:

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DEC
Environmental Response & Remediation

GRANT OF ACCESS TO PROPERTY

(Burbs, LLC) is the owner(s) ("Owner") of record, title holder or authorized agent for the record owner of certain real property located within Section 35, T1S, R4E, Summit County, Utah ("Property").

The Owner hereby grants to the officers, employees, authorized representatives and consultants of the Utah Division of Environmental Response and Remediation ("DERR") access, including ingress and egress, to the Property for the following purposes:

1. the taking of soil, sediment, and/or surface water samples,
2. a site inspection and the taking of photographs,
3. Any other such actions related to the taking of the above samples.

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NOV 23 2001

D.E.O.
Environmental Response & Remediation

The tasks described above may be altered if conditions change or if the DERR obtains additional information requiring further investigation. The DERR will notify the Owner in writing of any new planned tasks.

It is anticipated that the work described herein will be performed in late October or November, 2001. If it becomes necessary to perform the work at other times, the DERR will notify the Owner by telephone at least 24 hours before it intends to enter the Property.

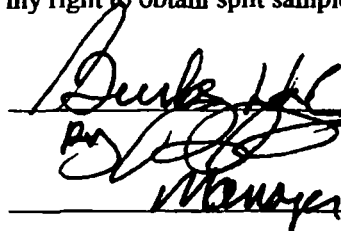
I have been informed and understand that these actions by the DERR are undertaken pursuant to the authorities provided in the Utah Environmental Quality Code of Utah Code Ann. Sections 19-1-101 et seq., (General Provisions), Sections 19-6-301 et seq. (Hazardous Substances Mitigation Act), and the Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA), 42 U.S.C.A. 9601.

By granting access to the DERR, the Owner makes no admission of liability or responsibility for any contamination, which may be found on the property. This grant of access is given voluntarily with knowledge of my right to refuse access. I further acknowledge that no other promises, representations or claims of any kind, either written or oral have been made by the DERR to induce my consent.

☐ I wish to obtain splits of all samples collected on the Property and a receipt describing each sample taken. I understand that I must provide the necessary sample containers to obtain these splits. The responsibility of choosing an analytical laboratory and the cost of analysis of the splits is solely mine.

☐ I waive my right to obtain split samples.

Owner's Signature:



11/20/2001
Date

Title:

Owner's Signature:

Date

Title:

APPENDIX ~~K~~ D

Sample Documentation: Laboratory Analytical Results and Chain-of-Custody

Project Name: **LSC** Cost Code: **367**

Sampler Name: **Alan V. Jones** Fac. ID: **Cuts ID UNDER**

DEQ Contact to Address Report / Questions To: **Ann Tillia, 536-4235**

CHAIN OF CUSTODY RECORD

State of Utah
 Division of Epidemiology and Laboratory Services
 46 North Medical Drive
 Salt Lake City, Utah 84113-1105 (801) 584-8400

Agency: DEQ/DERR						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
Street: 168 N 1950 W 1 st Floor										Tamper Evident Seal Intact Y/N	Comments					DLS Sample #		
City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100																		
Field ID #	Date	Time	Type	Depth	Location					GRO (C ₁ -C ₁₀)	DRO (C ₁₁ -C ₂₅)							
LSC-SS-78	11-02-01	12:50	Soil	0-6"	SS 78	Yes									Metal			2001-9281
LSC-SW-01	11-02-01	16:30	SW	"	SW 01	Yes									"			2001-9282
LSC-SD-31	11-02-01	16:30	Sed.	"	SD 31										"			2001-9283
LSC-SW-16	11-02-01	11:55	SW	"	SW 16	Yes									"			2001-9284
LSC-SD-46	"	11:55	Sed.	"	SD 46										"			2001-9285

COMMENTS: ONLY TOTAL METALS (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

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Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name: FEB 14 2002	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Outstation)	Date	Time	Received By: DEQ Environmental Response & Remediation	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand)	Date	Time	Received for DLS By: Cheri Repen aut	Date	Time
	11-5-01	11:26		11/5/2001	1126

Project Name: LSC Cost Code:

Sampler Name: Alan V. Jones Fac. ID:

DEQ Contact to Address Report / Questions To:
Ann Tilia, 536-4235

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

Agency: DEQ/DERR

Street: 168 N 1950 W 1st Floor

City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100

						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HYOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
Field ID #	Date	Time	Type	Depth	Location					GRO (C ₁ -C ₄)	DRO (C ₁ -C ₄)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
LSC-SW-07	11-02-01	15:35	surface water		SW 07	Yes									TOTAL Metals			2001-9286
LSC-SD-37	11-02-01	15:35	sediment	0-6"	SD 37										"			2001-9287
LSC-SD-49	11-02-01	11:10	Sed.	0-6"	SD 49										"			2001-9288
LSC-SW-19	11-02-01	11:10	SW		SW 19	Yes									"			2001-9289
LSC-SW-27	11-02-01	11:20	SW		SW 27	Yes									"			2001-9290

COMMENTS: ONLY TOTAL Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand)	Date	Time	Received from DLS By:	Date	Time
<i>Ann Tilia</i>	11-05-01	11:26	<i>Chris Repen</i>	11/5/2001	1126

Project Name: LSC Cost Code:

Sampler Name: Alan V. Jones Fac. ID:

DEQ Contact to Address Report / Questions To:
Ann Tillia, 536-4235

Agency: DEQ/DERR

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

Street: 168 N 1950 W 1st Floor

City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100

Field ID #	Date	Time	Type	Depth	Location	ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
										GRO (C ₁ -C ₁₀)	DRO (C ₁ -C ₁₀)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
LSC-SW-28	11-02-01	09:00	Surface Water		SW 28	Yes									TOTAL METALS			2001-9291
LSC-SD-76	11-02-01	09:00	Sed.	0-6"	SD 76										"			2001-9293
LSC-SW-02	11-02-01	16:15	SW		SW 02	Yes									"			2001-9294
LSC-SD-32	11-02-01	16:15	Sed	0-6"	SD 32										"			2001-9295
LSC-SW-17	11-02-01	11:45	SW		SW 17	Yes									"			2001-9296
LSC-SD-47	11-02-01	11:45	Sed	0-6"	SD 47										"			2001-9297

COMMENTS: ONLY TOTAL METALS (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <i>[Signature]</i>	Date 11-05-01	Time 11:26	Received for DLS By: <i>[Signature]</i>	Date 11/5/2001	Time 1126

Project Name: LSC Cost Code:

Sampler Name: Alan V. Jones Fac. ID:

DEQ Contact to Address Report / Questions To: Ann Tillia, 536-4235

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

Agency: DEQ/DERR

Street: 168 N 1950 W 1st Floor

City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100

Field ID #	Date	Time	Type	Depth	Location
------------	------	------	------	-------	----------

Field ID #	Date	Time	Type	Depth	Location	ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
										GRO (C ₁ -C ₁₀)	DRO (C ₁₁ -C ₂₀)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
LSC-SW-22	11-02-01	10:15	Surface water		SW22	Yes									total metals			2001-9298
LSC-SD-52	11-02-01	10:15	Sed	0-6"	SD52										"			2001-9299
LSC-SW-29	11-02-01	10:45	SW		SW29	Yes									"			2001-9300
LSC-SW-25	11-02-01	09:30	SW		SW25	Yes									"			2001-9301
LSC-SD-55	11-02-01	09:30	Sed	0-6"	SD55										"			2001-9302

COMMENTS: ONLY TOTAL Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand)	Date	Time	Received for DLS By:	Date	Time
<i>[Signature]</i>	11-05-01	11:26	<i>Cheri Repenert</i>	11/5/2001	11:26

Project Name: LSC Cost Code:

Sampler Name: Alan V. Jones Fac. ID:

DEQ Contact to Address Report / Questions To: Ann Tillia, 536-4235

Agency: DEQ/DERR

Street: 168 N 1950 W 1st Floor

City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
Field ID #	Date	Time	Type	Depth	Location					GRO (C ₁₀ -C ₁₄)	DRO (C ₁₀ -C ₁₄)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
LSC-SW-20	11-02-01	10:55	SW		SW 20	Yes									total Metals			2001-9303
LSC-SD-50	11/02/01	10:55	Sed	0-6"	SD 50										"			2001-9304
LSC-SD-33	11/02/01	12:25	Sed	0-6"	SD 33										"			2001-9305
LSC-SW-13	11/02/01	12:25	SW		SW 13	Yes									"			2001-9306
LSC-SW-09	11/02/01	14:30	SW		SW 09	Yes									"			2001-9307
LSC-SD-29	11/02/01	14:30	Sed		SD 29										"			2001-9308

COMMENTS: ONLY TOTAL Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand)	Date	Time	Received for DLS By:	Date	Time
<i>Ann Tillia</i>	11-05-01	11:26	<i>Shirley Pearson</i>	11/5/2001	1126

Project Name: LSC	Cost Code:
Sampler Name: Alani V. Jones	Fac. ID:
DEQ Contact to Address Report / Questions To: Ann Tillia, 536-4235	
Agency: DEQ/DERR	
Street: 168 N 1950 W 1 st Floor	
City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100	

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC, METALS	DLS USE ONLY		
Field ID #	Date	Time	Type	Depth	Location					GRO (C ₁₀ -C ₁₄)	DRO (C ₁₀ -C ₁₄)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
LSC-SW-24	11-02-01	09:50	surface water		SW 24	Yes									total metals			2001-9309
LSC-SD-54	11/02/01	09:50	Sed	0-6"	SD 54										"			2001-9310
LSC-SW-15	11/02/01	12:05	SW		SW 15	Yes									"			2001-9311
LSC-SD-45	11/02/01	12:05	Sed	0-6"	SD 45										"			2001-9312
LSC-SW-03	11/02/01	16:05	SW		SW 03	Yes									"			2001-9313
LSC-SD-33	11/02/01	16:05	Sed	0-6"	SD 33										"			2001-9314

COMMENTS: ONLY TOTAL Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <i>Ann Tillia</i>	Date 11-05-01	Time 11:26	Received for DLS By: <i>Debbie Pope mt</i>	Date 11/5/2001	Time 1126

Project Name: LSC Cost Code:

Sampler Name: Alan V. Jones Fac. ID:

DEQ Contact to Address Report / Questions To:
Ann Tillia, 536 4235

Agency: DEQ/DERR

Street: 168 N 1950 W 1st Floor

City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100

Field ID # Date Time Type Depth Location

LSC-SW-21 11-02-01 10:30 SW SW21

LSC-SD-51 11-02-01 10:30 Sed 0-6" SD51

LSC-SW-10 11-02-01 14:05 SW SW10

LSC-SD-30 11-02-01 14:05 Sed 0-6" SD30

LSC-SW-12 11-02-01 12:35 SW SW12

LSC-SD-32 11-02-01 12:35 Sed 0-6" SD32

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
				GRO (C ₁₀ -C ₁₄)	DRO (C ₁₀ -C ₁₄)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
Yes									Metals			2001-9315
									"			2001-9316
Yes									"			2001-9317
									"			2001-9318
Yes									"			2001-9319
									"			2001-9320

COMMENTS: ONLY TOTAL Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Immediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <u>[Signature]</u>	Date 11-05-01	Time 11:26	Received for DLS By: <u>Chris Repen</u>	Date 11/5/2001	Time 1126

Project Name: **LSC** Cost Code:

Sampler Name: **Alan V. Jones** Fac. ID:

DEQ Contact to Address Report / Questions To:
Ann Tilia, 536-4235

Agency: DEQ/DERR

Street: 168 N 1950 W 1st Floor

City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

Field ID #						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
Date	Time	Type	Depth	Location	GRO (C ₁ -C ₁₀)					DRO (C ₁₁ -C ₂₁)	Tamper Evident Seal Intact Y/N					Comments	DLS Sample #	
LSC-SW-18	11-02-01	11:30	SW		SW 18	Yes									total metals			2001- 9321
LSC-SD-48	11-02-01	11:30	Sed	0-6"	SD-48										"			2001- 9322
LSC-SW-08	11-02-01	15:10	SW		SW 08	Yes									"			2001- 9323
LSC-SD-38	11-02-01	15:10	Sed.	0-6"	SD 38										"			2001- 9324
LSC-SW-30	11-02-01	13:50	SW		SW 30	Yes									"			2001- 9325
LSC-SD-79	11-02-01	13:50	Sed.		SD 79										"			2001- 9326

COMMENTS: ONLY TOTAL METALS (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand)	Date	Time	Received for DLS By:	Date	Time
<i>[Signature]</i>	11-05-01	11:26	<i>Cheri Pepper mt</i>	11/5/2001	1126

Project Name: LSC	Cost Code:
Sampler Name: Alan V. Jones	Fac. ID:
DEQ Contact to Address Report / Questions To: Ann Tillia, 536-4235	
Agency: DEQ/DERR	

Street: 168 N 1950 W 1 st Floor	
City, St, Zip: Salt Lake City, Utah 84116	Phone: (801) 536-4100

Field ID #	Date	Time	Type	Depth	Location
LSC-SW14	11-02-01	12:15	Sample water		SW14
LSC-SD44	11/02/01	12:15	Sed	0-6"	SD44
LSC-SW23	11/02/01	10:05	SW		SW23
LSC-SD53	11/02/01	10:05	Sed	0-6"	SD53
LSC-SW11	11/02/01	12:45	SW		SW11
LSC-SD31	11/02/01	8:45	Sed	0-6"	SD31

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC METALS	DLS USE ONLY		
				GRO (C ₁₀ -C ₁₄)	DRO (C ₁₀ -C ₁₄)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
Yes												2001-9327
												2001-9328
Yes												2001-9329
												2001-9330
Yes												2001-9331
												2001-9292

COMMENTS: ONLY TOTAL Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Se, V, Zn, Ti, K, Na,)

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <i>Ann Tillia</i>	Date 11-05-01	Time 11:26	Received for DLS By: <i>Chris Perreault</i>	Date 11/5/2001	Time 1126

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109281 Sample Type: 50 Cost Code: 367
Description: LSC-SS - 78
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 12:50

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	8280 ppm	T-Arsenic	870.0 ppm
T-Barium	141.0 ppm	T-Beryllium	<0.385 ppm
T-Cadmium	207 ppm	T-Chromium	19.1 ppm
T-Cobalt	7.02 ppm	T-Copper	2330.0 ppm
T-Iron	23500.0 ppm	T-Lead	36100.0 ppm
T-Mangan	3080.0 ppm	T-Mercury	58.89 ppm
T-Nickel	<30.8 ppm	T-Selenium	<30.8 ppm
T-Silver	131.0 ppm	T-Zinc	41100.0 ppm
T-Vanadium	26.3 ppm	T-Antimony	548.0 ppm
T-Thallium	<15.4 ppm	T-Calcium	17300.0 ppm
T-Magnesium	5890.0 ppm	T-Potassium	1300.0 ppm
T-Sodium	657.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

RECEIVED
FEB 14 2002
DEQ
Environmental Response & Remediation

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109282 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 01
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 16:30

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	<5.0 ug/l
T-Barium	0.0402 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.8 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.187 mg/l	T-Lead	18.3 ug/l
T-Mangan	113.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	806.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	7.2 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	126.0 mg/l
T-Magnesium	33.0 mg/l	T-Potassium	3.38 mg/l
T-Sodium	49.8 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109283 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 31
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 16:30 Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	7940 ppm	T-Arsenic	328.0 ppm
T-Barium	83.6 ppm	T-Beryllium	<0.513 ppm
T-Cadmium	122 ppm	T-Chromium	51.4 ppm
T-Cobalt	24.2 ppm	T-Copper	463.0 ppm
T-Iron	86000.0 ppm	T-Lead	7650.0 ppm
T-Mangan	2000.0 ppm	T-Mercury	4.55 ppm
T-Nickel	<41.0 ppm	T-Selenium	<41.0 ppm
T-Silver	34.6 ppm	T-Zinc	22200.0 ppm
T-Vanadium	22.9 ppm	T-Antimony	111.0 ppm
T-Thallium	<20.5 ppm	T-Calcium	36400.0 ppm
T-Magnesium	11800.0 ppm	T-Potassium	889.0 ppm
T-Sodium	270.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109284 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 16
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 11:55 Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	16.2 ug/l
T-Barium	0.0668 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.7 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.153 mg/l	T-Lead	33.5 ug/l
T-Mangan	148.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	762.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	22.3 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	147.0 mg/l
T-Magnesium	37.3 mg/l	T-Potassium	8.08 mg/l
T-Sodium	93.6 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109285 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 46
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:55

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	7060 ppm	T-Arsenic	24.6 ppm
T-Barium	136.0 ppm	T-Beryllium	<0.302 ppm
T-Cadmium	11.4 ppm	T-Chromium	14.1 ppm
T-Cobalt	3.83 ppm	T-Copper	51.7 ppm
T-Iron	11200.0 ppm	T-Lead	664.0 ppm
T-Mangan	264.0 ppm	T-Mercury	2.72 ppm
T-Nickel	<24.2 ppm	T-Selenium	<24.2 ppm
T-Silver	3.86 ppm	T-Zinc	2160.0 ppm
T-Vanadium	24 ppm	T-Antimony	<12.1 ppm
T-Thallium	<12.1 ppm	T-Calcium	8820.0 ppm
T-Magnesium	2770.0 ppm	T-Potassium	1070.0 ppm
T-Sodium	224.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109286 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 07
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 15:35

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	14.6 ug/l
T-Barium	0.0311 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	6.2 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.0503 mg/l	T-Lead	16.2 ug/l
T-Mangan	119.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	1530.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	37.0 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	198.0 mg/l
T-Magnesium	49.9 mg/l	T-Potassium	5.2 mg/l
T-Sodium	62.2 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109287 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 37
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 15:35

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	7300 ppm	T-Arsenic	270.0 ppm
T-Barium	59.3 ppm	T-Beryllium	<0.263 ppm
T-Cadmium	69.3 ppm	T-Chromium	11.9 ppm
T-Cobalt	12.2 ppm	T-Copper	224.0 ppm
T-Iron	30100.0 ppm	T-Lead	4450.0 ppm
T-Mangan	5460.0 ppm	T-Mercury	7.1 ppm
T-Nickel	<21.0 ppm	T-Selenium	<21.0 ppm
T-Silver	16.9 ppm	T-Zinc	15500.0 ppm
T-Vanadium	13.2 ppm	T-Antimony	65.4 ppm
T-Thallium	<10.5 ppm	T-Calcium	22100.0 ppm
T-Magnesium	7730.0 ppm	T-Potassium	789.0 ppm
T-Sodium	170.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109288 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 49
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:10

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	12900 ppm	T-Arsenic	<29.6 ppm
T-Barium	195.0 ppm	T-Beryllium	<0.37 ppm
T-Cadmium	18.5 ppm	T-Chromium	15.5 ppm
T-Cobalt	5.58 ppm	T-Copper	75.6 ppm
T-Iron	13900.0 ppm	T-Lead	739.0 ppm
T-Mangan	555.0 ppm	T-Mercury	1.33 ppm
T-Nickel	<29.6 ppm	T-Selenium	<29.6 ppm
T-Silver	3.32 ppm	T-Zinc	3560.0 ppm
T-Vanadium	22.5 ppm	T-Antimony	<14.8 ppm
T-Thallium	<14.8 ppm	T-Calcium	16600.0 ppm
T-Magnesium	4720.0 ppm	T-Potassium	2110.0 ppm
T-Sodium	387.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109289 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 19
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:10

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	63.5 ug/l	T-Arsenic	15.9 ug/l
T-Barium	0.0713 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.5 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.151 mg/l	T-Lead	28.3 ug/l
T-Mangan	165.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	686.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	20.1 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	148.0 mg/l
T-Magnesium	38.0 mg/l	T-Potassium	8.74 mg/l
T-Sodium	107.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109290 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 27
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:20

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	59.3 ug/l	T-Arsenic	15.5 ug/l
T-Barium	0.0716 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.5 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.146 mg/l	T-Lead	27.2 ug/l
T-Mangan	162.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	678.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	20.0 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	146.0 mg/l
T-Magnesium	37.0 mg/l	T-Potassium	8.47 mg/l
T-Sodium	106.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109293 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 76
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 09:00

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	2790 ppm	T-Arsenic	38.8 ppm
T-Barium	51.8 ppm	T-Beryllium	<0.207 ppm
T-Cadmium	7.26 ppm	T-Chromium	8.02 ppm
T-Cobalt	2.97 ppm	T-Copper	49.7 ppm
T-Iron	7650.0 ppm	T-Lead	752.0 ppm
T-Mangan	558.0 ppm	T-Mercury	0.57 ppm
T-Nickel	<16.6 ppm	T-Selenium	<16.6 ppm
T-Silver	2.92 ppm	T-Zinc	1430.0 ppm
T-Vanadium	14.8 ppm	T-Antimony	17.3 ppm
T-Thallium	<8.28 ppm	T-Calcium	10400.0 ppm
T-Magnesium	2850.0 ppm	T-Potassium	376.0 ppm
T-Sodium	165.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV.EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109290 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 27
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:20

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	59.3 ug/l	T-Arsenic	15.5 ug/l
T-Barium	0.0716 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.5 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.146 mg/l	T-Lead	27.2 ug/l
T-Mangan	162.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	678.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	20.0 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	146.0 mg/l
T-Magnesium	37.0 mg/l	T-Potassium	8.47 mg/l
T-Sodium	106.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109291 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 28
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 09:00 Inorganic Review: 02/01/02

Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	48.2 ug/l	T-Arsenic	12.0 ug/l
T-Barium	0.1 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	<1 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.0967 mg/l	T-Lead	15.1 ug/l
T-Mangan	102.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	363.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	14.7 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	141.0 mg/l
T-Magnesium	32.3 mg/l	T-Potassium	7.06 mg/l
T-Sodium	94.4 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109292 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 31
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 12:45

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	8730 ppm	T-Arsenic	252.0 ppm
T-Barium	147.0 ppm	T-Beryllium	<0.236 ppm
T-Cadmium	85.6 ppm	T-Chromium	11.8 ppm
T-Cobalt	5.11 ppm	T-Copper	297.0 ppm
T-Iron	21400.0 ppm	T-Lead	5640.0 ppm
T-Mangan	1330.0 ppm	T-Mercury	4.52 ppm
T-Nickel	<18.9 ppm	T-Selenium	<18.9 ppm
T-Silver	33.6 ppm	T-Zinc	20500.0 ppm
T-Vanadium	14 ppm	T-Antimony	127.0 ppm
T-Thallium	<9.43 ppm	T-Calcium	42400.0 ppm
T-Magnesium	10500.0 ppm	T-Potassium	463.0 ppm
T-Sodium	238.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109294 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 02
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 16:15

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	31.4 ug/l	T-Arsenic	<5.0 ug/l
T-Barium	0.0429 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.9 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.213 mg/l	T-Lead	32.8 ug/l
T-Mangan	184.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	867.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	7.7 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	143.0 mg/l
T-Magnesium	36.5 mg/l	T-Potassium	3.7 mg/l
T-Sodium	54.5 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109295 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 32
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 16:15

Organic Review:
Inorganic Review: 01/28/02
Radiochemistry Review: 01/28/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	10200 ppm	T-Arsenic	164.0 ppm
T-Barium	184.0 ppm	T-Beryllium	<0.315 ppm
T-Cadmium	36.4 ppm	T-Chromium	15.3 ppm
T-Cobalt	14.5 ppm	T-Copper	249.0 ppm
T-Iron	38300.0 ppm	T-Lead	3740.0 ppm
T-Mangan	3760.0 ppm	T-Mercury	9.45 ppm
T-Nickel	<25.2 ppm	T-Selenium	<25.2 ppm
T-Silver	20.4 ppm	T-Zinc	8130.0 ppm
T-Vanadium	25.7 ppm	T-Antimony	56.9 ppm
T-Thallium	<12.6 ppm	T-Calcium	12500.0 ppm
T-Magnesium	6220.0 ppm	T-Potassium	30.4 ppm
T-Sodium	454.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109296 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 17
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 11:45 Inorganic Review: 12/18/01

Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	346 ug/l	T-Arsenic	18.1 ug/l
T-Barium	0.0836 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	3.4 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.651 mg/l	T-Lead	116.0 ug/l
T-Mangan	278.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	1020.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	20.6 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	155.0 mg/l
T-Magnesium	38.7 mg/l	T-Potassium	8.51 mg/l
T-Sodium	101.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109297 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 47
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:45

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	5260 ppm	T-Arsenic	54.4 ppm
T-Barium	109.0 ppm	T-Beryllium	<0.212 ppm
T-Cadmium	14.7 ppm	T-Chromium	10.4 ppm
T-Cobalt	4.59 ppm	T-Copper	66.7 ppm
T-Iron	7790.0 ppm	T-Lead	1140.0 ppm
T-Mangan	1280.0 ppm	T-Mercury	0.81 ppm
T-Nickel	<17.0 ppm	T-Selenium	<17.0 ppm
T-Silver	5.07 ppm	T-Zinc	4000.0 ppm
T-Vanadium	17 ppm	T-Antimony	20.1 ppm
T-Thallium	<8.48 ppm	T-Calcium	16600.0 ppm
T-Magnesium	5340.0 ppm	T-Potassium	848.0 ppm
T-Sodium	168.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109298 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 22
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 10:15 Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	127 ug/l	T-Arsenic	12.1 ug/l
T-Barium	0.1 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.5 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.216 mg/l	T-Lead	30.4 ug/l
T-Mangan	171.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	484.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	14.6 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	136.0 mg/l
T-Magnesium	30.5 mg/l	T-Potassium	6.85 mg/l
T-Sodium	88.5 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109299 Sample Type: 50 Cost Code: 367

Description: LSC-SD - 52

Collector: ANN TILLIA

Site ID: Source No: 00

Sample Date: 11/02/01 Time: 10:15

Organic Review:

Inorganic Review: 01/16/02

Radiochemistry Review: 01/16/02

Microbiology Review:

TEST RESULTS:

T-Aluminum	3150 ppm	T-Arsenic	51.1 ppm
T-Barium	78.1 ppm	T-Beryllium	<0.203 ppm
T-Cadmium	13.4 ppm	T-Chromium	10.8 ppm
T-Cobalt	3.37 ppm	T-Copper	47.6 ppm
T-Iron	23900.0 ppm	T-Lead	1000.0 ppm
T-Mangan	972.0 ppm	T-Mercury	0.88 ppm
T-Nickel	<16.3 ppm	T-Selenium	<16.3 ppm
T-Silver	5.24 ppm	T-Zinc	3390.0 ppm
T-Vanadium	17.4 ppm	T-Antimony	27.4 ppm
T-Thallium	<8.13 ppm	T-Calcium	14900.0 ppm
T-Magnesium	4390.0 ppm	T-Potassium	545.0 ppm
T-Sodium	175.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109300 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 29
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 10:45

Organic Review:
Inorganic Review: 12/21/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	<5.0 ug/l
T-Barium	0.2 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	<1 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.0221 mg/l	T-Lead	<3.0 ug/l
T-Mangan	9.8 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	<30.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	<3.0 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	72.3 mg/l
T-Magnesium	5.19 mg/l	T-Potassium	<1.0 mg/l
T-Sodium	7.88 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109301 Sample Type: 04 Cost Code: 367

Description: LSC-SW - 25

Collector: ANN TILLIA

Site ID: Source No: 00

Sample Date: 11/02/01 Time: 09:30

Organic Review:

Inorganic Review: 12/21/01

Radiochemistry Review:

Microbiology Review:

TEST RESULTS:

T-Aluminum	77.8 ug/l	T-Arsenic	11.9 ug/l
T-Barium	0.1 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.1 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.128 mg/l	T-Lead	23.0 ug/l
T-Mangan	111.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	377.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	14.9 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	138.0 mg/l
T-Magnesium	31.0 mg/l	T-Potassium	6.89 mg/l
T-Sodium	90.7 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109302 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 55
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 09:30

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	15700 ppm	T-Arsenic	<41.3 ppm
T-Barium	213.0 ppm	T-Beryllium	<0.516 ppm
T-Cadmium	64.4 ppm	T-Chromium	18.1 ppm
T-Cobalt	7.44 ppm	T-Copper	146.0 ppm
T-Iron	15300.0 ppm	T-Lead	1780.0 ppm
T-Mangan	473.0 ppm	T-Mercury	6.19 ppm
T-Nickel	<41.3 ppm	T-Selenium	<41.3 ppm
T-Silver	7.36 ppm	T-Zinc	4490.0 ppm
T-Vanadium	27.5 ppm	T-Antimony	21.5 ppm
T-Thallium	<20.6 ppm	T-Calcium	21100.0 ppm
T-Magnesium	4850.0 ppm	T-Potassium	2830.0 ppm
T-Sodium	462.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109303 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 20
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 10:55 Inorganic Review: 01/08/02
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	76 ug/l	T-Arsenic	16.6 ug/l
T-Barium	0.071 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.4 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.16 mg/l	T-Lead	25.5 ug/l
T-Mangan	188.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	642.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	20.1 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	148.0 mg/l
T-Magnesium	18.5 mg/l	T-Potassium	4.34 mg/l
T-Sodium	57.1 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109304 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 50
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 10:55 Inorganic Review: 01/16/02

Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	5760 ppm	T-Arsenic	28.0 ppm
T-Barium	70.8 ppm	T-Beryllium	<0.282 ppm
T-Cadmium	10.9 ppm	T-Chromium	9.25 ppm
T-Cobalt	3.68 ppm	T-Copper	49.7 ppm
T-Iron	14600.0 ppm	T-Lead	486.0 ppm
T-Mangan	225.0 ppm	T-Mercury	1.6 ppm
T-Nickel	<22.6 ppm	T-Selenium	<22.6 ppm
T-Silver	1.96 ppm	T-Zinc	2460.0 ppm
T-Vanadium	16.1 ppm	T-Antimony	<11.3 ppm
T-Thallium	<11.3 ppm	T-Calcium	6610.0 ppm
T-Magnesium	2250.0 ppm	T-Potassium	960.0 ppm
T-Sodium	269.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109305 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 33
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 12:25 Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	6090 ppm	T-Arsenic	142.0 ppm
T-Barium	141.0 ppm	T-Beryllium	<0.482 ppm
T-Cadmium	41.3 ppm	T-Chromium	11.3 ppm
T-Cobalt	5.43 ppm	T-Copper	234.0 ppm
T-Iron	8590.0 ppm	T-Lead	3580.0 ppm
T-Mangan	1650.0 ppm	T-Mercury	2.31 ppm
T-Nickel	<38.5 ppm	T-Selenium	<38.5 ppm
T-Silver	16.5 ppm	T-Zinc	9650.0 ppm
T-Vanadium	16.1 ppm	T-Antimony	58.1 ppm
T-Thallium	<19.3 ppm	T-Calcium	19700.0 ppm
T-Magnesium	6040.0 ppm	T-Potassium	1100.0 ppm
T-Sodium	430.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109306 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 13
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 12:25 Inorganic Review: 12/21/01

Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	41.9 ug/l	T-Arsenic	<5.0 ug/l
T-Barium	0.0595 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	2.1 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.317 mg/l	T-Lead	94.9 ug/l
T-Mangan	196.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	1065.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	25.3 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	158.0 mg/l
T-Magnesium	39.6 mg/l	T-Potassium	8.58 mg/l
T-Sodium	94.1 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109307 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 09
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 14:30 Inorganic Review: 12/21/01

Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	10.3 ug/l
T-Barium	0.0313 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	6 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.033 mg/l	T-Lead	7.3 ug/l
T-Mangan	118.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	2110.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	35.6 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	213.0 mg/l
T-Magnesium	52.9 mg/l	T-Potassium	5.64 mg/l
T-Sodium	65.9 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV.EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109308 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 29
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 14:30

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	11500 ppm	T-Arsenic	467.0 ppm
T-Barium	59.3 ppm	T-Beryllium	<0.362 ppm
T-Cadmium	110 ppm	T-Chromium	22.8 ppm
T-Cobalt	15.3 ppm	T-Copper	677.0 ppm
T-Iron	30100.0 ppm	T-Lead	13700.0 ppm
T-Mangan	5220.0 ppm	T-Mercury	11.1 ppm
T-Nickel	<28.9 ppm	T-Selenium	<28.9 ppm
T-Silver	34.8 ppm	T-Zinc	27300.0 ppm
T-Vanadium	22.2 ppm	T-Antimony	192.0 ppm
T-Thallium	<14.5 ppm	T-Calcium	41300.0 ppm
T-Magnesium	24200.0 ppm	T-Potassium	708.0 ppm
T-Sodium	179.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109309 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 24
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 09:50

Organic Review:
Inorganic Review: 12/21/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	71.9 ug/l	T-Arsenic	11.7 ug/l
T-Barium	0.1 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.2 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.116 mg/l	T-Lead	20.8 ug/l
T-Mangan	109.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	378.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	14.5 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	134.0 mg/l
T-Magnesium	29.8 mg/l	T-Potassium	6.65 mg/l
T-Sodium	87.4 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109310 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 54
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 09:50

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	6410 ppm	T-Arsenic	36.4 ppm
T-Barium	117.0 ppm	T-Beryllium	<0.268 ppm
T-Cadmium	14.2 ppm	T-Chromium	11.4 ppm
T-Cobalt	3.95 ppm	T-Copper	73.4 ppm
T-Iron	8040.0 ppm	T-Lead	991.0 ppm
T-Mangan	414.0 ppm	T-Mercury	4.03 ppm
T-Nickel	<21.5 ppm	T-Selenium	<21.5 ppm
T-Silver	5.3 ppm	T-Zinc	3220.0 ppm
T-Vanadium	18.5 ppm	T-Antimony	15.5 ppm
T-Thallium	<10.7 ppm	T-Calcium	11100.0 ppm
T-Magnesium	2520.0 ppm	T-Potassium	792.0 ppm
T-Sodium	167.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109311 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 15
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 12:05

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	33.7 ug/l	T-Arsenic	16.4 ug/l
T-Barium	0.0629 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.9 ug/l	T-Chromium	18.8 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.183 mg/l	T-Lead	46.8 ug/l
T-Mangan	153.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	787.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	23.2 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	153.0 mg/l
T-Magnesium	38.3 mg/l	T-Potassium	8.27 mg/l
T-Sodium	92.1 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109312 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 45
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 12:05 Inorganic Review: 01/28/02

Radiochemistry Review: 01/28/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	4200 ppm	T-Arsenic	215.0 ppm
T-Barium	97.8 ppm	T-Beryllium	<0.216 ppm
T-Cadmium	56.7 ppm	T-Chromium	12.4 ppm
T-Cobalt	6.74 ppm	T-Copper	192.0 ppm
T-Iron	21800.0 ppm	T-Lead	3450.0 ppm
T-Mangan	1760.0 ppm	T-Mercury	2.1 ppm
T-Nickel	<17.3 ppm	T-Selenium	<17.3 ppm
T-Silver	22.1 ppm	T-Zinc	18700.0 ppm
T-Vanadium	14.7 ppm	T-Antimony	93.6 ppm
T-Thallium	<8.64 ppm	T-Calcium	24800.0 ppm
T-Magnesium	6480.0 ppm	T-Potassium	669.0 ppm
T-Sodium	210.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109313 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 03
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 16:05 Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	33.4 ug/l	T-Arsenic	<5.0 ug/l
T-Barium	0.0407 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.9 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.187 mg/l	T-Lead	33.0 ug/l
T-Mangan	169.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	789.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	7.7 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	138.0 mg/l
T-Magnesium	35.1 mg/l	T-Potassium	3.62 mg/l
T-Sodium	51.5 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109314 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 33
Collector: AVN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 16:05

Organic Review:
Inorganic Review: 01/28/02
Radiochemistry Review: 01/28/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	12700 ppm	T-Arsenic	168.0 ppm
T-Barium	170.0 ppm	T-Beryllium	<0.317 ppm
T-Cadmium	47.5 ppm	T-Chromium	18.9 ppm
T-Cobalt	15.4 ppm	T-Copper	271.0 ppm
T-Iron	40600.0 ppm	T-Lead	3530.0 ppm
T-Mangan	1860.0 ppm	T-Mercury	6.67 ppm
T-Nickel	<25.4 ppm	T-Selenium	<25.4 ppm
T-Silver	19.0 ppm	T-Zinc	10900.0 ppm
T-Vanadium	34.5 ppm	T-Antimony	46.5 ppm
T-Thallium	<12.7 ppm	T-Calcium	21400.0 ppm
T-Magnesium	8150.0 ppm	T-Potassium	1560.0 ppm
T-Sodium	335.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109315 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 21
Collector: ANN TILLIA

Site ID:	Source No: 00	Organic Review:
Sample Date: 11/02/01	Time: 10:30	Inorganic Review: 12/18/01
		Radiochemistry Review:
		Microbiology Review:

TEST RESULTS:

T-Aluminum	78.2 ug/l	T-Arsenic	15.7 ug/l
T-Barium	0.073 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.2 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.161 mg/l	T-Lead	24.4 ug/l
T-Mangan	198.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	571.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	19.5 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	156.0 mg/l
T-Magnesium	39.0 mg/l	T-Potassium	8.97 mg/l
T-Sodium	114.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109316 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 51
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 10:30

Organic Review:
Inorganic Review: 01/16/02
Radiochemistry Review: 01/16/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	18900 ppm	T-Arsenic	51.5 ppm
T-Barium	353.0 ppm	T-Beryllium	<0.536 ppm
T-Cadmium	32.9 ppm	T-Chromium	21.7 ppm
T-Cobalt	9.07 ppm	T-Copper	125.0 ppm
T-Iron	21700.0 ppm	T-Lead	1350.0 ppm
T-Mangan	936.0 ppm	T-Mercury	3.85 ppm
T-Nickel	<42.9 ppm	T-Selenium	<42.9 ppm
T-Silver	6.76 ppm	T-Zinc	6970.0 ppm
T-Vanadium	30.8 ppm	T-Antimony	<21.4 ppm
T-Thallium	<21.4 ppm	T-Calcium	22400.0 ppm
T-Magnesium	6180.0 ppm	T-Potassium	2970.0 ppm
T-Sodium	357.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109317 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 10
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 14:05

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	94.3 ug/l	T-Arsenic	23.4 ug/l
T-Barium	0.0343 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	4.7 ug/l	T-Chromium	6.8 ug/l
T-Cobalt	<30 ug/l	T-Copper	26.4 ug/l
T-Iron	0.526 mg/l	T-Lead	260.0 ug/l
T-Mangan	145.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	1270.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	21.7 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	162.0 mg/l
T-Magnesium	40.4 mg/l	T-Potassium	10.6 mg/l
T-Sodium	129.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109318 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 30
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 14:05 Inorganic Review: 02/04/02

Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	5790 ppm	T-Arsenic	555.0 ppm
T-Barium	92.3 ppm	T-Beryllium	<0.382 ppm
T-Cadmium	145 ppm	T-Chromium	16.4 ppm
T-Cobalt	8.56 ppm	T-Copper	806.0 ppm
T-Iron	33500.0 ppm	T-Lead	10800.0 ppm
T-Mangan	2430.0 ppm	T-Mercury	33.49 ppm
T-Nickel	<30.6 ppm	T-Selenium	<30.6 ppm
T-Silver	64.7 ppm	T-Zinc	30300.0 ppm
T-Vanadium	16.2 ppm	T-Antimony	338.0 ppm
T-Thallium	<15.3 ppm	T-Calcium	32100.0 ppm
T-Magnesium	11900.0 ppm	T-Potassium	635.0 ppm
T-Sodium	568.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109319 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 12
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 12:35

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	45.8 ug/l	T-Arsenic	19.4 ug/l
T-Barium	0.0525 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	2.3 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.336 mg/l	T-Lead	122.0 ug/l
T-Mangan	184.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	1010.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	24.6 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	155.0 mg/l
T-Magnesium	38.7 mg/l	T-Potassium	9.06 mg/l
T-Sodium	100.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109320 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 32
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 12:35 Inorganic Review: 02/04/02

Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	2240 ppm	T-Arsenic	129.0 ppm
T-Barium	39.9 ppm	T-Beryllium	<2.19 ppm
T-Cadmium	24 ppm	T-Chromium	11.8 ppm
T-Cobalt	<1.75 ppm	T-Copper	174.0 ppm
T-Iron	8210.0 ppm	T-Lead	3140.0 ppm
T-Mangan	1240.0 ppm	T-Mercury	4.97 ppm
T-Nickel	<17.5 ppm	T-Selenium	<17.5 ppm
T-Silver	24.6 ppm	T-Zinc	6380.0 ppm
T-Vanadium	7.16 ppm	T-Antimony	66.2 ppm
T-Thallium	<8.74 ppm	T-Calcium	31500.0 ppm
T-Magnesium	7490.0 ppm	T-Potassium	454.0 ppm
T-Sodium	107.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109321 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 18
Collector: ANN TILLIA

Site ID:	Source No: 00	Organic Review:
Sample Date: 11/02/01	Time: 11:30	Inorganic Review: 12/18/01
		Radiochemistry Review:
		Microbiology Review:

TEST RESULTS:

T-Aluminum	59.1 ug/l	T-Arsenic	15.7 ug/l
T-Barium	0.0694 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	1.7 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.18 mg/l	T-Lead	35.5 ug/l
T-Mangan	161.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	639.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	20.9 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	152.0 mg/l
T-Magnesium	37.9 mg/l	T-Potassium	8.55 mg/l
T-Sodium	103.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109322 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 48
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 11:30

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	7930 ppm	T-Arsenic	43.6 ppm
T-Barium	148.0 ppm	T-Beryllium	<0.304 ppm
T-Cadmium	21.3 ppm	T-Chromium	15.0 ppm
T-Cobalt	5.01 ppm	T-Copper	78.8 ppm
T-Iron	13200.0 ppm	T-Lead	1080.0 ppm
T-Mangan	654.0 ppm	T-Mercury	1.22 ppm
T-Nickel	<24.3 ppm	T-Selenium	<24.3 ppm
T-Silver	4.72 ppm	T-Zinc	5300.0 ppm
T-Vanadium	21.2 ppm	T-Antimony	12.7 ppm
T-Thallium	<12.2 ppm	T-Calcium	13600.0 ppm
T-Magnesium	3380.0 ppm	T-Potassium	1270.0 ppm
T-Sodium	271.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109323 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 08
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/02/01 Time: 15:10 Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	11.7 ug/l
T-Barium	0.0293 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	7 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.0358 mg/l	T-Lead	10.0 ug/l
T-Mangan	160.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	1980.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	35.2 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	207.0 mg/l
T-Magnesium	51.6 mg/l	T-Potassium	5.44 mg/l
T-Sodium	64.1 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109324 Sample Type: 50 Cost Code: 367
Description: LSC-SD - 38
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 15:10

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	4450 ppm	T-Arsenic	222.0 ppm
T-Barium	49.8 ppm	T-Beryllium	<0.28 ppm
T-Cadmium	97.5 ppm	T-Chromium	12.7 ppm
T-Cobalt	5.24 ppm	T-Copper	348.0 ppm
T-Iron	26500.0 ppm	T-Lead	6120.0 ppm
T-Mangan	1200.0 ppm	T-Mercury	11.8 ppm
T-Nickel	<22.4 ppm	T-Selenium	<22.4 ppm
T-Silver	30.9 ppm	T-Zinc	20600.0 ppm
T-Vanadium	11.1 ppm	T-Antimony	119.0 ppm
T-Thallium	<11.2 ppm	T-Calcium	24200.0 ppm
T-Magnesium	8690.0 ppm	T-Potassium	500.0 ppm
T-Sodium	148.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109325 Sample Type: 04 Cost Code: 367
Description: LSC-SW - 30
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/02/01 Time: 13:50

Organic Review:
Inorganic Review: 12/18/01
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ug/l	T-Arsenic	14.2 ug/l
T-Barium	0.0249 mg/l	T-Beryllium	<1 ug/l
T-Cadmium	<1 ug/l	T-Chromium	<5.0 ug/l
T-Cobalt	<30 ug/l	T-Copper	<12.0 ug/l
T-Iron	0.0542 mg/l	T-Lead	25.6 ug/l
T-Mangan	22.0 ug/l	T-Mercury	<0.2 ug/l
T-Nickel	<10.0 ug/l	T-Selenium	<1.0 ug/l
T-Silver	<2.0 ug/l	T-Zinc	122.0 ug/l
T-Vanadium	<3 ug/l	T-Antimony	5.5 ug/l
T-Thallium	<1.0 ug/l	T-Calcium	117.0 mg/l
T-Magnesium	30.1 mg/l	T-Potassium	13.0 mg/l
T-Sodium	160.0 mg/l		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

Project Name: LSC (Lower Silver Creek) Cost Code: 367
 Sampler Name: Ann Tillia Fac. ID:
 DEQ Contact to Address Report / Questions To:
Ann Tillia 5364235

CHAIN OF CUSTODY RECORD

State of Utah
 Division of Epidemiology and Laboratory Services
 46 North Medical Drive
 Salt Lake City, Utah 84113-1105 (801) 584-8400

Alia
Dave
Zimmer

11-21-01

Agency: DEQ/DERR						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC, METALS	DLS USE ONLY		
Street: 168 N 1950 W 1 st Floor										Tamper Evident Seal Intact Y/N	Comments					DLS Sample #		
City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100																		
Field ID #	Date	Time	Type	Depth	Location					GRO (C ₁ -C ₁₀)	DRO (C ₁ -C ₁₀)							
X69	11-6-01	10:35	soil	0-6"	SS 56											total metals		2001-9901
X72	11-6-01	11:35	soil	"	SS 57											total metals		2001-9902
X83	"	14:05	"	"	SS 58											"		2001-9903
X	11/08/01	10:15	"	"	SS 59											"		2001-9904
	"	11:35	"	"	SS 60											"		2001-9905
	11/09/01	09:15	"	"	SS 61											"		2001-9906

COMMENTS: Total Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, ~~Hg~~, Mn, Ni, Ag, Tl, Se, V, Zn) + Ca, Sb

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name: RECEIVED FEB 14 2002	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By: DEQ Environmental Response & Remediation	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <i>Ann Tillia</i>	Date <u>11/20/2001</u>	Time <u>1200</u>	Received for DLS By: <i>Chris Repen</i>	Date <u>11/20/2001</u>	Time <u>1200</u>

Project Name: <i>LSC (Lower Silver Creek)</i>		Cost Code: <i>367</i>			
Sampler Name: <i>Ann Tillia</i>		Fac. ID:			
DEQ Contact to Address Report / Questions To: <i>Ann Tillia 536 4235</i>					
Agency: DEQ/DERR					
Street: 168 N 1950 W 1 st Floor					
City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100					
Field ID #	Date	Time	Type	Depth	Location
	110901	10:45	Soil	0-6"	SS62
	"	12:50	"	"	SS63
	110901	15:00	"	"	SS64
	110901	15:45	"	"	SS65
	111301	10:00	"	"	SS66
	111301	12:10	"	"	SS67

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC, METALS	DLS USE ONLY		
				GRO (C ₁ -C ₁₀)	DRO (C ₁ -C ₁₀)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #
												2001- 9907
												2001- 9908
												2001- 9909
												2001- 9910
												2001- 9911
												2001- 9912

COMMENTS: *Total Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Ti, Se, V, Zn) Ca Sb*

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand)	Date	Time	Received for DLS By:	Date	Time
<i>[Signature]</i>	11/20/2001	1200	<i>Chris Repenhet</i>	11/20/2001	1200

Project Name: LSC (Lower Silver Creek) Cost Code: 367
 Sampler Name: Ann Tillia Fac. ID:
 DEQ Contact to Address Report / Questions To: Ann Tillia 5364235

CHAIN OF CUSTODY RECORD

State of Utah
 Division of Epidemiology and Laboratory Services
 46 North Medical Drive
 Salt Lake City, Utah 84113-1105 (801) 584-8400

Agency: DEQ/DERR						ACID PRESERVED Y/N	# CONTAINER	BTEXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8015B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC, METALS	DLS USE ONLY				
Street: 168 N 1950 W 1 st Floor										GRO (C ₁ -C ₁₀)	DRO (C ₁ -C ₁₀)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #		
City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100																				
Field ID #	Date	Time	Type	Depth	Location															
	11/30/	14:40	Soil	0-6"	SS68											total metals		2001-9913		
	11/40/	10:20	"	"	SS69											total metals		2001-9914		
	11/40/	11:08	"	"	SS70											"		2001-9915		
	11/40/	14:30	"	"	SS71											"		2001-9916		
	11/40/	1530	"	"	SS72											"		2001-9917		
	11/50/	10:20	"	"	SS73											"		2001-9918		

COMMENTS: Total Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Ti, Se, V, Zn) Ca Sb

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <u>Ann Tillia</u>	Date 11/20/2001	Time 1200	Received for DLS By: <u>Chris Repenhet</u>	Date 11/20/2001	Time 1200

Project Name: <u>LSC (Lower Silver Creek)</u>	Cost Code: <u>367</u>
Sampler Name: <u>Ann Tillia</u>	Fac. ID:
DEQ Contact to Address Report / Questions To: <u>Ann Tillia 5364235</u>	
Agency: DEQ/DERR	
Street: 168 N 1950 W 1 st Floor	
City, St, Zip: Salt Lake City, Utah 84116 Phone: (801) 536-4100	

CHAIN OF CUSTODY RECORD

State of Utah
Division of Epidemiology and Laboratory Services
46 North Medical Drive
Salt Lake City, Utah 84113-1105 (801) 584-8400

Field ID #	Date	Time	Type	Depth	Location	ACID PRESERVED Y/N	# CONTAINER	BTXN (8021B/8260B)	MTBE (8021B/8260B)	TPH (8013B)		HVOA (8260B)	O & G (1664)	OTHER	INORGANIC, METALS	DLS USE ONLY			
										GRO (C ₁ -C ₁₀)	DRO (C ₁₁ -C ₁₂)					Tamper Evident Seal Intact Y/N	Comments	DLS Sample #	
	11/501	13:10	Soil	0-6"	SS74											total metals			2001-9919-
	11/501	14:10	"	"	SS75											total metals			2001-9920-
	110901	0905	surface water		SW06	Y										"			2001-9921-
																"			
																"			
																"			

COMMENTS: Total Metals (Al, As, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Mg, Hg, Mn, Ni, Ag, Ti, Se, V, Zn) + Ca Sb

Dispatched By: (For Mailing/Shipping)	Date	Time	Courier Company Name:	Invoice/Airbill #:	
Relinquished By: (For Transfer to Intermediate Custodian)	Date	Time	Received By:	Date	Time
Relinquished to DLS By: (For Transfer to Lab by Hand) <u>Ann Tillia</u>	Date 11/20/2001	Time 1200	Received for DLS By: <u>Chris Repenert</u>	Date 11/20/2001	Time 1200

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109901 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 56
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/06/01 Time: 10:35

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	1640 ppm	T-Arsenic	337.0 ppm
T-Barium	28.8 ppm	T-Beryllium	<0.343 ppm
T-Cadmium	108 ppm	T-Chromium	10.1 ppm
T-Cobalt	8.15 ppm	T-Copper	337.0 ppm
T-Iron	33300.0 ppm	T-Lead	6110.0 ppm
T-Mangan	2320.0 ppm	T-Mercury	6.6 ppm
T-Nickel	<27.4 ppm	T-Selenium	<27.4 ppm
T-Silver	29.7 ppm	T-Zinc	22700.0 ppm
T-Vanadium	5.83 ppm	T-Antimony	214.0 ppm
T-Thallium	<13.7 ppm	T-Calcium	38200.0 ppm
T-Magnesium	11500.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109902 Sample Type: 50 Cost Code: 367
Description: LOWER SLIVER CREEK - SS 57
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/06/01 Time: 11:35

Organic Review:
Inorganic Review: 02/11/02
Radiochemistry Review: 02/11/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	9710 ppm	T-Arsenic	247.0 ppm
T-Barium	78.7 ppm	T-Beryllium	<0.437 ppm
T-Cadmium	201 ppm	T-Chromium	51.4 ppm
T-Cobalt	7.21 ppm	T-Copper	554.0 ppm
T-Iron	30100.0 ppm	T-Lead	9600.0 ppm
T-Mangan	1650.0 ppm	T-Mercury	11.5 ppm
T-Nickel	<34.9 ppm	T-Selenium	<34.9 ppm
T-Silver	44.7 ppm	T-Zinc	27800.0 ppm
T-Vanadium	17.6 ppm	T-Antimony	105.0 ppm
T-Thallium	<17.5 ppm	T-Calcium	55600.0 ppm
T-Magnesium	30500.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109903 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 58
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/06/01 Time: 14:05

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	1720 ppm	T-Arsenic	215.0 ppm
T-Barium	30.1 ppm	T-Beryllium	<0.374 ppm
T-Cadmium	84.3 ppm	T-Chromium	12.1 ppm
T-Cobalt	6.85 ppm	T-Copper	315.0 ppm
T-Iron	30700.0 ppm	T-Lead	4260.0 ppm
T-Mangan	2310.0 ppm	T-Mercury	4.5 ppm
T-Nickel	<29.9 ppm	T-Selenium	<29.9 ppm
T-Silver	29.1 ppm	T-Zinc	17800.0 ppm
T-Vanadium	5.92 ppm	T-Antimony	130.0 ppm
T-Thallium	<14.9 ppm	T-Calcium	50200.0 ppm
T-Magnesium	16000.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109904 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 59
Collector: ANN TILLIA

Site ID:	Source No: 00	Organic Review:
Sample Date: 11/08/01	Time: 10:15	Inorganic Review: 02/04/02
		Radiochemistry Review: 02/04/02
		Microbiology Review:

TEST RESULTS:

T-Aluminum	18900 ppm	T-Arsenic	64.9 ppm
T-Barium	179.0 ppm	T-Beryllium	<0.368 ppm
T-Cadmium	9.74 ppm	T-Chromium	19.7 ppm
T-Cobalt	10.2 ppm	T-Copper	146.0 ppm
T-Iron	19700.0 ppm	T-Lead	1300.0 ppm
T-Mangan	943.0 ppm	T-Mercury	1.17 ppm
T-Nickel	<29.4 ppm	T-Selenium	<29.4 ppm
T-Silver	11.1 ppm	T-Zinc	1440.0 ppm
T-Vanadium	29.5 ppm	T-Antimony	31.6 ppm
T-Thallium	<14.7 ppm	T-Calcium	4960.0 ppm
T-Magnesium	4630.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109905 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 60
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/08/01 Time: 11:35 Inorganic Review: 02/04/02

Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	17800 ppm	T-Arsenic	106.0 ppm
T-Barium	161.0 ppm	T-Beryllium	<0.392 ppm
T-Cadmium	13.8 ppm	T-Chromium	20.0 ppm
T-Cobalt	9.57 ppm	T-Copper	235.0 ppm
T-Iron	20300.0 ppm	T-Lead	2440.0 ppm
T-Mangan	1030.0 ppm	T-Mercury	2.28 ppm
T-Nickel	<31.4 ppm	T-Selenium	<31.4 ppm
T-Silver	18.5 ppm	T-Zinc	2580.0 ppm
T-Vanadium	32 ppm	T-Antimony	51.4 ppm
T-Thallium	<15.7 ppm	T-Calcium	5220.0 ppm
T-Magnesium	4410.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109906 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 61
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/09/01 Time: 09:15

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	8070 ppm	T-Arsenic	77.1 ppm
T-Barium	138.0 ppm	T-Beryllium	<0.554 ppm
T-Cadmium	25.8 ppm	T-Chromium	14.3 ppm
T-Cobalt	5.23 ppm	T-Copper	482.0 ppm
T-Iron	13100.0 ppm	T-Lead	8.56 ppm
T-Mangan	343.0 ppm	T-Mercury	32.2 ppm
T-Nickel	<44.3 ppm	T-Selenium	<44.3 ppm
T-Silver	23.2 ppm	T-Zinc	3450.0 ppm
T-Vanadium	35.1 ppm	T-Antimony	109.0 ppm
T-Thallium	<22.1 ppm	T-Calcium	6070.0 ppm
T-Magnesium	3010.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109907 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 62
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/09/01 Time: 10:45

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	2530 ppm	T-Arsenic	647.0 ppm
T-Barium	64.1 ppm	T-Beryllium	<0.384 ppm
T-Cadmium	142 ppm	T-Chromium	11.1 ppm
T-Cobalt	3.93 ppm	T-Copper	1330.0 ppm
T-Iron	17200.0 ppm	T-Lead	14100.0 ppm
T-Mangan	2480.0 ppm	T-Mercury	15.0 ppm
T-Nickel	<30.7 ppm	T-Selenium	<30.7 ppm
T-Silver	84.5 ppm	T-Zinc	36900.0 ppm
T-Vanadium	7.94 ppm	T-Antimony *	432.0 ppm
T-Thallium	<15.3 ppm	T-Calcium	23800.0 ppm
T-Magnesium	7010.0 ppm		

QUALIFYING COMMENTS (*) on test results:

T-Antimony Due to matrix interference this sample result is not reliable.

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109908 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 63
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/09/01 Time: 12:50 Inorganic Review: 02/04/02

Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	3180 ppm	T-Arsenic	459.0 ppm
T-Barium	51.7 ppm	T-Beryllium	<0.379 ppm
T-Cadmium	110 ppm	T-Chromium	14.3 ppm
T-Cobalt	4.54 ppm	T-Copper	1330.0 ppm
T-Iron	22100.0 ppm	T-Lead	16200.0 ppm
T-Mangan	2410.0 ppm	T-Mercury	15.9 ppm
T-Nickel	<30.3 ppm	T-Selenium	<30.3 ppm
T-Silver	94.0 ppm	T-Zinc	38500.0 ppm
T-Vanadium	9.63 ppm	T-Antimony	389.0 ppm
T-Thallium	<15.2 ppm	T-Calcium	34700.0 ppm
T-Magnesium	10900.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109909 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 64
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/09/01 Time: 15:00

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	14500 ppm	T-Arsenic	48.1 ppm
T-Barium	189.0 ppm	T-Beryllium	<0.476 ppm
T-Cadmium	12.8 ppm	T-Chromium	17.4 ppm
T-Cobalt	10.8 ppm	T-Copper	116.0 ppm
T-Iron	18600.0 ppm	T-Lead	1040.0 ppm
T-Mangan	1240.0 ppm	T-Mercury	1.31 ppm
T-Nickel	<38.1 ppm	T-Selenium	<38.1 ppm
T-Silver	8.38 ppm	T-Zinc	1880.0 ppm
T-Vanadium	26.6 ppm	T-Antimony	21.9 ppm
T-Thallium	<19.0 ppm	T-Calcium	10800.0 ppm
T-Magnesium	4540.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109910 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 65
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/09/01 Time: 15:45

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	1740 ppm	T-Arsenic	650.0 ppm
T-Barium	47.0 ppm	T-Beryllium	<0.368 ppm
T-Cadmium	295 ppm	T-Chromium	8.59 ppm
T-Cobalt	4.7 ppm	T-Copper	1270.0 ppm
T-Iron	20600.0 ppm	T-Lead	22300.0 ppm
T-Mangan	2800.0 ppm	T-Mercury	20.8 ppm
T-Nickel	<29.4 ppm	T-Selenium	<29.4 ppm
T-Silver	90.3 ppm	T-Zinc	60400.0 ppm
T-Vanadium	6.6 ppm	T-Antimony	482.0 ppm
T-Thallium	<14.7 ppm	T-Calcium	11900.0 ppm
T-Magnesium	5810.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109911 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 66
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/13/01 Time: 10:00

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	5420 ppm	T-Arsenic	913.0 ppm
T-Barium	124.0 ppm	T-Beryllium	<0.415 ppm
T-Cadmium	265 ppm	T-Chromium	18.4 ppm
T-Cobalt	8.97 ppm	T-Copper	1760.0 ppm
T-Iron	21400.0 ppm	T-Lead	26000.0 ppm
T-Mangan	5680.0 ppm	T-Mercury	63.5 ppm
T-Nickel	<33.2 ppm	T-Selenium	<33.2 ppm
T-Silver	145.0 ppm	T-Zinc	48700.0 ppm
T-Vanadium	16.1 ppm	T-Antimony	568.0 ppm
T-Thallium	<16.6 ppm	T-Calcium	31400.0 ppm
T-Magnesium	9270.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109912 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 67
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/13/01 Time: 12:10

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	13900 ppm	T-Arsenic	64.3 ppm
T-Barium	170.0 ppm	T-Beryllium	<0.406 ppm
T-Cadmium	10.1 ppm	T-Chromium	16.0 ppm
T-Cobalt	8.67 ppm	T-Copper	148.0 ppm
T-Iron	16700.0 ppm	T-Lead	1510.0 ppm
T-Mangan	837.0 ppm	T-Mercury	1.36 ppm
T-Nickel	<32.4 ppm	T-Selenium	<32.4 ppm
T-Silver	11.5 ppm	T-Zinc	1610.0 ppm
T-Vanadium	29.6 ppm	T-Antimony	29.0 ppm
T-Thallium	<16.2 ppm	T-Calcium	4900.0 ppm
T-Magnesium	3330.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109913 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 68
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/13/01 Time: 14:40

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	6250 ppm	T-Arsenic	513.0 ppm
T-Barium	84.1 ppm	T-Beryllium	<0.365 ppm
T-Cadmium	121 ppm	T-Chromium	13.4 ppm
T-Cobalt	7.46 ppm	T-Copper	1080.0 ppm
T-Iron	26100.0 ppm	T-Lead	16700.0 ppm
T-Mangan	2300.0 ppm	T-Mercury	52.6 ppm
T-Nickel	<29.2 ppm	T-Selenium	<29.2 ppm
T-Silver	80.9 ppm	T-Zinc	24100.0 ppm
T-Vanadium	15.1 ppm	T-Antimony	310.0 ppm
T-Thallium	<14.6 ppm	T-Calcium	24800.0 ppm
T-Magnesium	7470.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109914 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 69
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/14/01 Time: 10:20

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	18300 ppm	T-Arsenic	58.8 ppm
T-Barium	222.0 ppm	T-Beryllium	<0.476 ppm
T-Cadmium	23.2 ppm	T-Chromium	18.3 ppm
T-Cobalt	10.9 ppm	T-Copper	220.0 ppm
T-Iron	19400.0 ppm	T-Lead	3360.0 ppm
T-Mangan	495.0 ppm	T-Mercury	1.17 ppm
T-Nickel	<38.1 ppm	T-Selenium	<38.1 ppm
T-Silver	11.0 ppm	T-Zinc	2220.0 ppm
T-Vanadium	25.8 ppm	T-Antimony	40.7 ppm
T-Thallium	<19.0 ppm	T-Calcium	8340.0 ppm
T-Magnesium	5360.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109915 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 70
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/14/01 Time: 11:08

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	1840 ppm	T-Arsenic	646.0 ppm
T-Barium	55.9 ppm	T-Beryllium	<0.363 ppm
T-Cadmium	178 ppm	T-Chromium	8.03 ppm
T-Cobalt	3.33 ppm	T-Copper	1030.0 ppm
T-Iron	19100.0 ppm	T-Lead	13500.0 ppm
T-Mangan	1750.0 ppm	T-Mercury	14.6 ppm
T-Nickel	<29.0 ppm	T-Selenium	<29.0 ppm
T-Silver	88.1 ppm	T-Zinc	34000.0 ppm
T-Vanadium	8.83 ppm	T-Antimony	364.0 ppm
T-Thallium	<14.5 ppm	T-Calcium	28800.0 ppm
T-Magnesium	9000.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W

SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109916 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 71
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/14/01 Time: 14:30 Inorganic Review: 02/04/02

Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	8630 ppm	T-Arsenic	333.0 ppm
T-Barium	117.0 ppm	T-Beryllium	<0.382 ppm
T-Cadmium	81.6 ppm	T-Chromium	8.51 ppm
T-Cobalt	9.62 ppm	T-Copper	1140.0 ppm
T-Iron	22500.0 ppm	T-Lead	12400.0 ppm
T-Mangan	1600.0 ppm	T-Mercury	144.2 ppm
T-Nickel	<30.5 ppm	T-Selenium	<30.5 ppm
T-Silver	100.0 ppm	T-Zinc	14700.0 ppm
T-Vanadium	12.6 ppm	T-Antimony	364.0 ppm
T-Thallium	<15.3 ppm	T-Calcium	9810.0 ppm
T-Magnesium	3880.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109917 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 72
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/14/01 Time: 15:30

Organic Review:
Inorganic Review: 02/11/02
Radiochemistry Review: 02/11/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	10000 ppm	T-Arsenic	467.0 ppm
T-Barium	236.0 ppm	T-Beryllium	<0.422 ppm
T-Cadmium	82.8 ppm	T-Chromium	17.8 ppm
T-Cobalt	5.38 ppm	T-Copper	1330.0 ppm
T-Iron	19000.0 ppm	T-Lead	18400.0 ppm
T-Mangan	1370.0 ppm	T-Mercury	63.3 ppm
T-Nickel	<33.8 ppm	T-Selenium	<33.8 ppm
T-Silver	68.1 ppm	T-Zinc	18000.0 ppm
T-Vanadium	22.1 ppm	T-Antimony	322.0 ppm
T-Thallium	<16.9 ppm	T-Calcium	14900.0 ppm
T-Magnesium	6300.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109918 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 73
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/15/01 Time: 10:20

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	6260 ppm	T-Arsenic	481.0 ppm
T-Barium	101.0 ppm	T-Beryllium	<0.359 ppm
T-Cadmium	110 ppm	T-Chromium	13.8 ppm
T-Cobalt	6.31 ppm	T-Copper	1080.0 ppm
T-Iron	22400.0 ppm	T-Lead	15600.0 ppm
T-Mangan	1980.0 ppm	T-Mercury	45.3 ppm
T-Nickel	<28.7 ppm	T-Selenium	<28.7 ppm
T-Silver	76.4 ppm	T-Zinc	23400.0 ppm
T-Vanadium	15 ppm	T-Antimony	269.0 ppm
T-Thallium	<14.4 ppm	T-Calcium	26300.0 ppm
T-Magnesium	7530.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109919 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 74
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/15/01 Time: 13:10

Organic Review:
Inorganic Review: 02/04/02
Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	2240 ppm	T-Arsenic	396.0 ppm
T-Barium	31.4 ppm	T-Beryllium	<0.366 ppm
T-Cadmium	132 ppm	T-Chromium	9.44 ppm
T-Cobalt	15.2 ppm	T-Copper	725.0 ppm
T-Iron	56700.0 ppm	T-Lead	11100.0 ppm
T-Mangan	2490.0 ppm	T-Mercury	12.3 ppm
T-Nickel	<29.3 ppm	T-Selenium	<29.3 ppm
T-Silver	54.9 ppm	T-Zinc	26700.0 ppm
T-Vanadium	7.51 ppm	T-Antimony	232.0 ppm
T-Thallium	<14.6 ppm	T-Calcium	34200.0 ppm
T-Magnesium	11100.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109920 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SS 75
Collector: ANN TILLIA

Site ID: Source No: 00 Organic Review:
Sample Date: 11/15/01 Time: 14:10 Inorganic Review: 02/04/02

Radiochemistry Review: 02/04/02
Microbiology Review:

TEST RESULTS:

T-Aluminum	2020 ppm	T-Arsenic	359.0 ppm
T-Barium	22.6 ppm	T-Beryllium	<0.352 ppm
T-Cadmium	118 ppm	T-Chromium	9.9 ppm
T-Cobalt	8.03 ppm	T-Copper	433.0 ppm
T-Iron	42000.0 ppm	T-Lead	10300.0 ppm
T-Mangan	2060.0 ppm	T-Mercury	5.7 ppm
T-Nickel	<28.1 ppm	T-Selenium	<28.1 ppm
T-Silver	87.9 ppm	T-Zinc	23000.0 ppm
T-Vanadium	7.23 ppm	T-Antimony	189.0 ppm
T-Thallium	<14.1 ppm	T-Calcium	33000.0 ppm
T-Magnesium	12746.0 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

UTAH STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORY SERVICES
Environmental Chemistry Analysis Report

DIV. EMERGENCY RESPONSE & REMED

ATTN:

168 N 1950 W
SALT LAKE CITY

UT 84114

801-536-4100

Lab Number: 200109921 Sample Type: 50 Cost Code: 367
Description: LOWER SILVER CREEK - SW 06
Collector: ANN TILLIA

Site ID: Source No: 00
Sample Date: 11/09/01 Time: 09:05

Organic Review:
Inorganic Review: 01/08/02
Radiochemistry Review:
Microbiology Review:

TEST RESULTS:

T-Aluminum	<30 ppm	T-Arsenic	<5.0 ppm
T-Barium	0.0709 ppm	T-Beryllium	<1 ppm
T-Cadmium	<1 ppm	T-Chromium	<5.0 ppm
T-Cobalt	<30 ppm	T-Copper	<12.0 ppm
T-Iron	<0.02 ppm	T-Lead	<3.0 ppm
T-Mangan	<5.0 ppm	T-Mercury	<0.2 ppm
T-Nickel	<10.0 ppm	T-Selenium	<1.0 ppm
T-Silver	<2.0 ppm	T-Zinc	<30.0 ppm
T-Vanadium	3.4 ppm	T-Antimony	<3.0 ppm
T-Thallium	<1.0 ppm	T-Calcium	20.4 ppm
T-Magnesium	5.85 ppm		

QUALIFYING COMMENTS (*) on test results: NO COMMENTS

END OF REPORT

Appendix E

Silver Creek Flow Measurements

November 2, 2001

Provided by

UDEQ/Division of Water Quality

Poor Quality Source Document

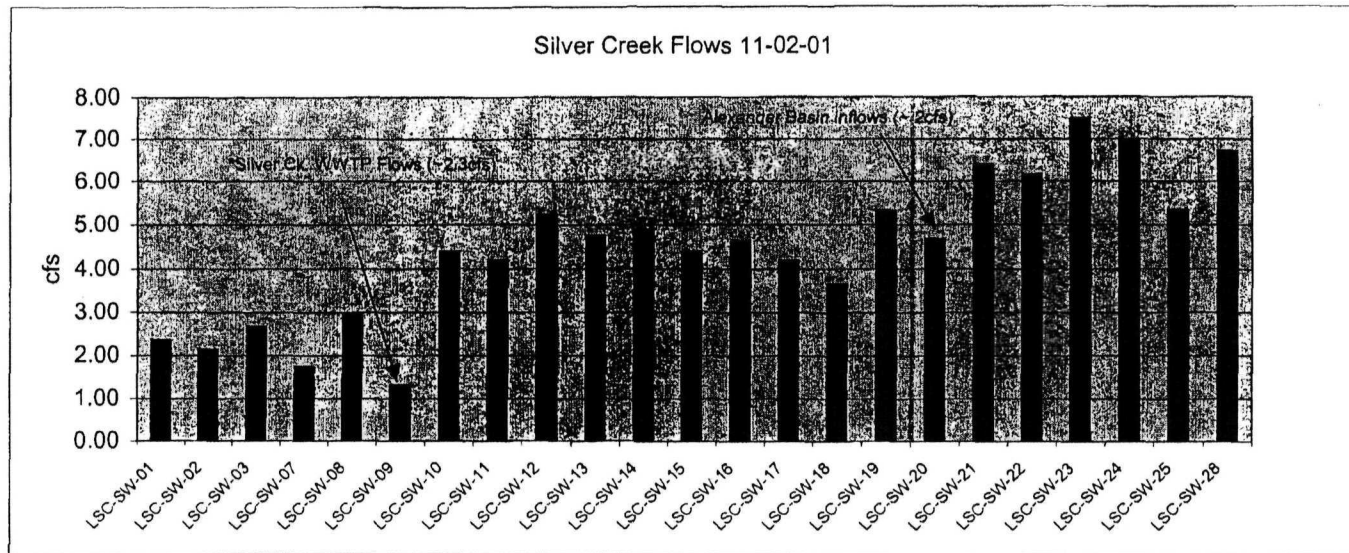
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Center at (303) 312-6473.

UDEQ/DERR Lower Silver Creek IA
 Silver Creek Flow Measurements provided by UDEQ/Division of Water Quality
 Nov. 2, 2001

Station	Flow cfs
LSC-SW-01	2.35
LSC-SW-02	2.13
LSC-SW-03	2.65
LSC-SW-07	1.74
LSC-SW-08	2.95
LSC-SW-09	1.31
LSC-SW-10	4.39
LSC-SW-11	4.20
LSC-SW-12	5.23
LSC-SW-13	4.75
LSC-SW-14	4.90
LSC-SW-15	4.40
LSC-SW-16	4.64
LSC-SW-17	4.20
LSC-SW-18	3.65
LSC-SW-19	5.33
LSC-SW-20	4.67
LSC-SW-21	6.40
LSC-SW-22	6.16
LSC-SW-23	7.51
LSC-SW-24	6.97
LSC-SW-25	5.34
LSC-SW-28	6.70

LSC-SW-30 2.32



*Silver Creek Waste Water Treatment (Synderville Basin Water Reclamation District)

Appendix F

Pre-CERCLIS Screening Assessment Checklist/Decision Form

United States
Environmental Protection
Agency

Office of
Solid Waste and
Emergency Response

EPA-540-F-98-039
OSWER 9375.2-11FS
PB98-963310

October 1999

Improving Site Assessment: Pre-CERCLIS Screening Assessments

Office of Emergency and Remedial Response
Site Assessment Team

Quick Reference Guidance Series

PRE-CERCLIS SCREENING ASSESSMENT CHECKLIST/DECISION FORM

This checklist can assist the site investigator during the Pre-CERCLIS screening. It will be used to determine whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

Checklist Preparer: Ann M. Tillia 07-26-02
(Name/Title) (Date)
PO Box 144840, Salt Lake City, UT. 84114-4840 801-536-4235
(Address) (Phone)
atillia@utah.gov
(E-Mail Address)

Site Name: Lower Silver Creek

Previous Names (if any): _____

Site Location: Summit County (Silver Creek riparian zone north of Utah State Road U-248 to Wanship, Utah)

(Street)
Park City, UT 84060
(City) (ST) (Zip)

Latitude: 40° 40' 58.31" North Longitude: 111° 27' 22.44" West

Complete the following checklist. If "yes" is marked, please explain below.

	YES	NO
1. Does the site already appear in CERCLIS?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Is the release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Does the site consist of a release of a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Is the release into a public or private drinking water supply due to deterioration of the system through ordinary use?	<input type="checkbox"/>	<input type="checkbox"/>
5. Is some other program actively involved with the site (i.e., another Federal, State, or Tribal program)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (i.e., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7. Are the hazardous substances potentially released at the site excluded by policy considerations (e.g., deferral to RCRA Corrective Action)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Is there sufficient documentation that clearly demonstrates that there is no potential for a release that could cause adverse environmental or human health impacts (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, EPA approved risk assessment completed)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Please explain all "yes" answer(s), attach additional sheets if necessary: _____

DECISION/DISCUSSION/RATIONALE:

The Lower Silver Creek site, located in Summit County, Utah, includes the riparian habitat adjacent to Silver Creek north of State Road U-248 north to the confluence with the Weber River in Wanship. Within the site private property owners use the land for grazing purposes, and the Utah Division of Parks and Recreation maintains the Rail Trail, which is part of the Historical Union Pacific Rail Trail State Park. The Rail Trail is used extensively for hiking, bicycling, observing wildlife, and access to fishing Silver Creek. The surrounding area is rapidly being developed with commercial businesses to the west and with a high-end residential community to the east. Silver Creek is on the Utah State 303(d) list as impaired by zinc and cadmium. The laboratory analytical results of sampling collected in November 2001 show elevated concentrations of heavy metals associated with historical mining activities in the area. The soil analytical results show high concentrations for lead (36,100 ppm), arsenic (77 ppm), mercury (144 ppm), zinc (60400 ppm), and antimony (568 ppm). The highest surface water sample lead and antimony concentration was 260 ppb and 37 ppb, respectively. The cadmium concentrations in the surface water samples exceeded SCDM in a few samples with a high of 7 ppb. The sediment samples were collected concurrently with the surface water samples and similarly show high concentrations of lead (13,700 ppm), arsenic (555 ppm), mercury (34 ppm), zinc (30,300 ppm), antimony (338 ppm), and cadmium (145 ppm). In addition, XRF analysis included high concentrations of lead (37,196 ppm), arsenic (2160 ppm), mercury (149 ppm), zinc (96,460 ppm), and chromium (3696 ppm).

The concentration data provided within the Innovative Assessment exceed the U.S. EPA SCDM benchmark levels used as a baseline for hazardous substance comparison purposes, qualifying as a potential release into the environment. The Utah DERR recommends further assessment work be performed at this site based on the analytical data and on-site observations.

Site Determination: ☒ Enter the site into CERCLIS. Further assessment is recommended (explain below).
☐ The site is not recommended for placement into CERCLIS (explain below).

Regional EPA Reviewer: _____
Print Name/Signature Date

State Agency/Tribe: Ann M. Tillia / July 26, 2002
Print Name/Signature Date